

CSIR NEWS

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CSIR NEWS

A Fortnightly News Bulletin

NEW DELHI - JUNE 22, 1957

ASADHA 1, 1879

MEETING

The first meeting of the *Standing Committee for the Popularisation of Science* will be held at New Delhi on June 24, 1957. Shri K. D. Malaviya, Union Minister of Mines and Oil, will preside.

CLRI—FIFTH DEMONSTRATION

'Manufacture of Glace Kids' is the fifth process (in the series of practical demonstrations) arranged at the Central Leather Research Institute, Madras. The demonstration, which commenced on June 5, 1957, is expected to continue till July 10, 1957.

CLRI—SECOND 'OPEN HOUSE'

The second in the series of 'Open House' programme started by the Central Leather Research Institute commenced on June 17, 1957. It is expected to continue for six days. It includes a special exhibition displaying the raw materials, finished leathers and leather goods.

Personal

*The President, CSIR, has been pleased to approve that Dr. J. W. Whitaker shall, in addition to his duties as Director, CMRS, Dhanbad, hold temporarily the charge of the NCL, Poona. He will temporarily give up his duties as Special Officer, CSIR. Dr. Whitaker is expected to assume charge as Director, NCL, with effect from July 1, 1957.

*SHRI C. S. RANGAN, Junior Scientific Officer, NPL, New Delhi, has been promoted as Senior Scientific Officer with effect from May 9, 1957.

*SHRI M. V. JOSHI, Junior Scientific Officer, NPL, New Delhi, has been promoted as Senior Scientific Officer with effect from May 9, 1957.

*DR. V. NARASIMHAN has been promoted as Junior Scientific Officer, NPL, New Delhi, with effect from May 9, 1957.

*SHRI K. C. SRIVASTAVA has been promoted as Junior Scientific Officer, NPL, New Delhi, with effect from May 9, 1957.

*SHRI S. DAS GUPTA has been promoted as Junior Scientific Officer, NPL, New Delhi, with effect from May 9, 1957.

*SHRI K. S. SARMA has been promoted as Junior Scientific Officer, NPL, New Delhi, with effect from May 9, 1957.

*DR. A. VISWANATHAN has been promoted as Junior Scientific Officer, NPL, New Delhi, with effect from May 9, 1957.

*DR. KANWAR BAHADUR has been promoted as Junior Scientific Officer, NPL, New Delhi, with effect from May 9, 1957.

*SHRI N. C. VAIDYA has been promoted as Junior Scientific Officer, NPL, New Delhi, with effect from May 9, 1957.

*SHRI B. V. KESHAVAN has been promoted as Junior Scientific Officer, CEERI, Pilani, with effect from May 17, 1957.

*SHRI K. D. PAVETE has been appointed Junior Scientific Officer, CEERI, Pilani, with effect from May 1, 1957.

*DR. V. S. SUBRAMANYAM has been appointed Junior Scientific Officer, RRL, Hyderabad, with effect from April 24, 1957.

*DR. B. R. NIJHAWAN, Director, NML, Jamshedpur, has been nominated a representative of the Co-ordinating Committee of the All India Council for Technical Education on the All India Board for Technical Study in Engineering and Metallurgy for a period of 3 years with effect from Jan. 1, 1957.

*DR. K. N. MATHUR, Deputy Director, NPL, New Delhi, has been nominated as a CSIR representative on the *Standing Working Committee (Electrotechnical)* of the Electrotechnical Division Council, Indian Standards Institution.

*DR. Y. NAYUDAMMA, Assistant Director-in-charge, CLRI, Madras, has been nominated a member of the delegation to represent India at the Fifth Meeting of the *United Nations ECAFE Working Party on Small Scale Industries and Handicrafts Marketing* to be held in Madras from June 17 to June 24, 1957.

*DR. S. N. PRASAD, Assistant Director, CGCRI, Calcutta, continues to represent the CSIR on the reconstituted *Signals (Glassware) Sub-committee* of the Indian Standards Institution.

*SHRI K. D. SHARMA, Assistant Director, CGCRI, Calcutta, continues to represent the CSIR on the reconstituted *Glass Raw Materials Sub-committee* of the Indian Standards Institution.

*SHRI S. K. BORKAR, Drug Controller (India), Ministry of Health, Government of India, New Delhi, has been nominated member of the *Scientific Advisory Committee*, CDRI, Lucknow and *Pharmaceuticals & Drugs Research Committee*, CSIR.

*PROF. S. MACKEY, UNESCO Professor of Civil Engineering, Indian Institute of Technology, Kharagpur, has resigned from the membership of the Building Research Committee, CSIR, with effect from June 10, 1957.

*DR. B. MUKERJI, Director, CDRI, Lucknow, left for Geneva on June 14, 1957, to attend the meeting of the *Committee on Food Additives of the W.H.O. and F.A.O.* He is expected to visit important centres of drug research and industry in France, Switzerland and England.

*DR. S. PARTHASARATHY, Assistant Director, NPL, New Delhi, left on June 9, 1957 for Belvue (France) to participate in the *International Colloquium on Optical and acoustical properties of compressed fluid and intermolecular effects*. He will also be going to U.K. to visit some of the laboratories specializing in Ultrasonics.

BRIEFS

THE RESOURCES AND CHARACTERISTICS of Indian manganese ore for use in the manufacture of ferromanganese have been reviewed in a report entitled 'Indian manganese ores and their thermal beneficiation for ferromanganese manufacture' brought out by Dr. B. R. Nijhawan, Director, NML, Jamshedpur. The 20-page cyclostyled report outlines the projected plans for ferromanganese production keeping in view the steel expansion envisaged in the second Five-Year Plan.

Attempts of other countries in respect of pyrometallurgical processes for thermal beneficiation of low-grade manganese ores have been discussed and initial work conducted at the National Metallurgical Laboratory in this field has been briefly described. Details of a pilot plant scheme drawn up for thermal beneficiation of low-grade manganese ore including the design of the rotary furnace to be employed are furnished.

The report also refers to the possibilities of conducting experimental smelting of manganese ores in the Low Shaft Furnace under erection at Jamshedpur for smelting of iron ores with non-coking coals.

STUDIES ON THE PRESERVATION OF canned mangoes (*Fazli*, *Langra* and *Himsagar* varieties) have been carried out at the College of Engineering and Technology, Calcutta, under a research scheme financed by the CSIR.

Out of the three varieties of mangoes *Himsagar* variety was found to give the best canned product. Flavour and colour of this variety of mango after 6 months' storage at room temperature were similar to those of the fresh fruits. Canning with 50 per cent cane sugar syrup gave best storage life. In the case of *Langra*, the colour was fairly well preserved, but the flavour was greatly lost and off-flavour developed; canning with 35 per cent cane sugar containing 0.25 per cent citric acid gave the best results. Natural flavour of *Fazli* mango was greatly lost and a syrupy flavour became increasingly prominent with storage. The colour also faded slightly. Slices of canned *Fazli* mango retained their shape very well even after 6 months' storage at room temperature.

Loss of carotene during processing was more in *Langra* mango than in *Fazli* or *Himsagar*. Leaching of acid from the fruits took place even when 0.5 per cent citric acid was present in syrup. An equilibrium was reached between the acid contents of mangoes and syrup just after processing, which was maintained throughout the storage period. Equilibrium between the sugar in slices and in syrup was also reached during heat treatment and was maintained with storage, but inversion of cane sugar continued at gradually decreasing rate.

STUDIES ON THE EFFECT OF DIFFERENT food constituents (inorganic salts, starch, sugars and fatty acids) on the heat resistance of spores of a strain of *Bacillus subtilis* isolated from spoilt vegetable cans have been in progress at the College of Engineering and Technology, Calcutta in a CSIR scheme under the guidance of Dr. A. N. Bose.

It is observed that lower concentrations (up to 0.01 per cent) of sodium chloride increase the resistance of spores to thermal destruction. At higher concentrations of sodium chloride the spores are rendered less and less resistant. Calcium chloride was found to have a more profound effect than sodium chloride.

The susceptibility of the spore to thermal destruction progressively increased with the increase in sucrose concentration from 15 to 55 per cent. Equimolar amounts of glucose have little effect on the heat resistance of the spores.

The thermal resistance of the spores progressively lowered with the increased molecular weight of the fatty acid (acetic, *n*-propionic, and *n*-butyric).

Starch did not affect heat resistance of *B. subtilis* spores up to 1 per cent concentration in the medium.

The effect of these constituents in the growth medium on the germination, growth and sporulation of *B. subtilis* is under investigation.

THE REACTION BETWEEN ZIRCONYL chloride and mandelic acid has been investigated by Dr. R. C. Mehrotra, Lucknow University, Lucknow, under a research scheme financed by the CSIR.

The following general conclusions have been arrived at as a result of the investigations: (i) The reaction in dilute acids or neutral solutions results in the precipitation mainly of zirconium monomandate. The existence of the monomandate as definite chemical compound is proved by its formation under widely varying conditions of precipitation; (2) Zirconium monomandate is obtained when sodium mandelate solution is added to zirconyl chloride solution. However, when the molar ratio of mandelate: zirconium exceeds 2, dissolution of the precipitated monomandate begins to take place; (3) Conductometric and electrometric titrations between zirconyl chloride and mandelic acid as well as sodium mandelate solutions indicate that the reactions are slow. Preliminary studies have shown that the precipitated salt corresponds to zirconium monomandate and not the tetramandate.

THE FOLLOWING HAVE BEEN AWARDED Research Fellowships in the CSIR-sponsored research schemes noted against their names.

Senior Research Fellowship

1. SHRI GOVIND BHAKT JOSHI—Transport of fruits and vegetables (Jadavpur University, Calcutta).

2. SHRI S. K. SENGUPTA—Investigations on steroid (Jadavpur University, Calcutta).

3. SHRI NARAYAN CHANDRA ROY—Catalytic conversion of tar acids in low temperature tars into phenol etc. (University College of Science and Technology, Calcutta).

4. SHRI A. RAMALINGAM—Pilot plant preparation of ethylene oxide and products from the same (Shri Ram Institute for Industrial Research, Delhi).

Junior Research Fellowship

1. KUMARI SEPHALI GUHA and SHRI SUNIL KUMAR PODDAR—Physico-chemical studies on Indian silk (Calcutta University, Calcutta).

2. SHRI A. SUNDARA RAJAN—Setting up of secondary standards by microwave spectral lines and study of the microwave spectra of the different isotopic species of methyl amine methyl alcohol (Muslim University, Aligarh).

National Laboratories

National Chemical Laboratory, Poona

Shark Ray Elastoidin

The influence of steam and alkali treatments on elastoidin was studied. Cystine was decomposed to lanthionine and hydrogen sulphide by alkali, while steam treatment under pressure gave hydrogen sulphide but no lanthionine. Tyrosine was unaffected by steam. The lanthionine-S content of the fibre after treatment was 0.063 per cent and the cystine-S content was 0.089 per cent.

Costus Root Oil

A method for the isolation of Costus oil from the roots of *Sussara lappa* by solvent extraction with petroleum ether at 40-60°C. has been standardised on a semi-large scale. The oil is obtained in the form in which it exists in the roots. Almost 60 per cent of the oil obtained by this method is composed of crystalline lactones, one of which 'constanolide' ($C_{15}H_{20}O_2$) has been obtained in a pure state. Other lactonic and non lactonic components are being purified through chromatography and other techniques for further study.

National Metallurgical Laboratory, Jamshedpur

Reduction of Nickel Oxide

A systematic study of the reaction between nickel oxide and carbon was undertaken to procure data to be used in separating nickel and zinc from a mixture of its oxides by reduction. The samples of nickel oxide selected for study were (1) B.D.H. nickel oxide and (2) Oxide produced freshly by roasting chemically pure nickel sulphate. The reduction was studied at 900°, 1000° and 1100°C.

The results of the study showed that the rate of reduction of nickel oxide depends on the form and quality of carbon, quality of nickel oxide and temperature of reduction.

Electrolytic Manganese

A semi-pilot plant (capacity, 25 lb./day) for the production of electrolytic manganese metal (99.95 per cent purity) from low-grade manganese ore has been set up at the Laboratory. Samples of the metal have been reported to be suitable substitutes for standard and low-carbon ferromanganese.

Central Drug Research Institute, Lucknow

Antibiotic X 340

An antibiotic X 340 has been isolated from a *Streptomyces* species obtained from a local soil sample. The infra-red and ultra-violet absorption spectra show some remarkable similarity between this antibiotic and tetracycline. The antibiotic is being further investigated for its chemical constitution and biological activity.

Blood Protein in Lead Anaemia

Blood protein distribution studies in lead anaemia have been made by chemical and electrophoretic methods. In anaemic condition there is a drop in albumin and a corresponding rise in globulin content in albino rabbits. Globulin fractions are different from the normal fraction.

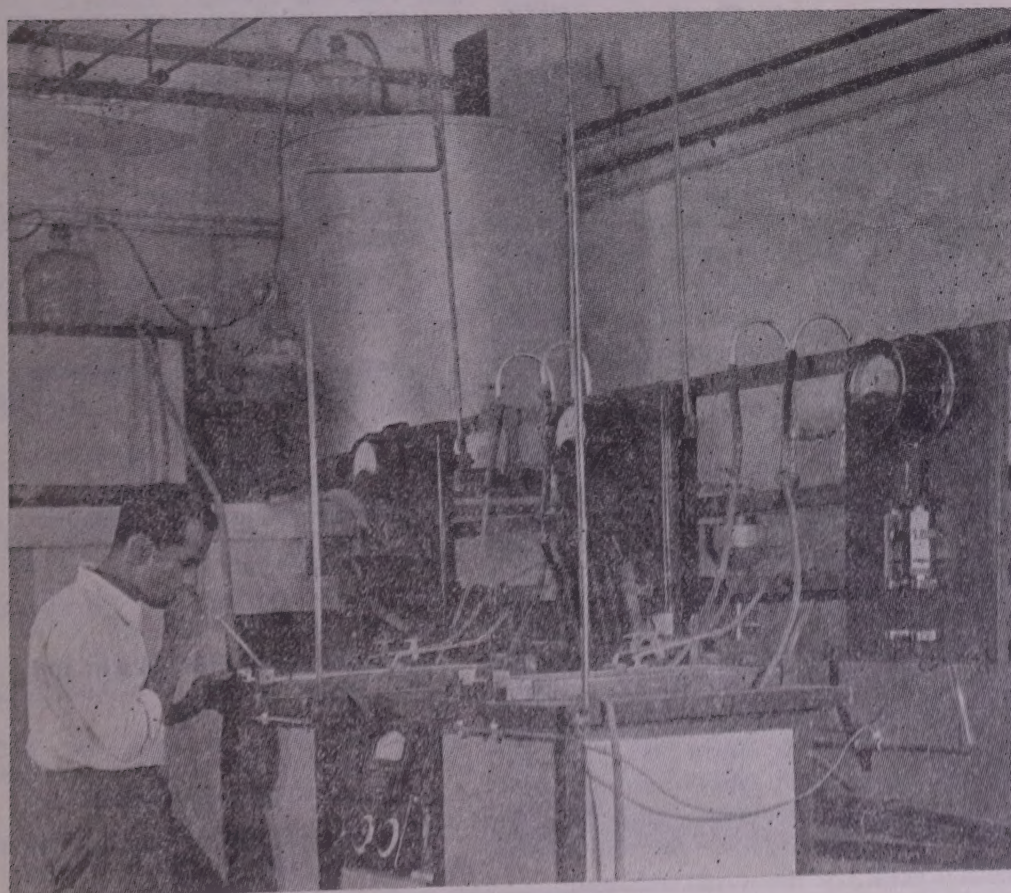
Central Salt Research Institute, Bhavnagar

Recovery of Potassium Chloride from Sea Bitterns

A process for the recovery of potassium chloride from waste sea bitterns has been worked out. The process consists in removing the sulphate content of the bitterns by adding commercial calcium chloride and concentrating the desulphated bitterns to yield a double salt, carnallite. The potassium chloride is recovered from carnallite by dissolving it in water, concentrating to super-saturation point and cooling to low temperatures. The purity of the potassium chloride obtained is 97-99 per cent with an overall yield of 85-90 per cent.

Mixed Fertiliser and Light Magnesium Carbonate from Sea Bitterns

A carbonation-ammoniation process has been developed for converting the magnesium salts of sea bitterns into light magnesium carbonate and for fixing the potash content in the form of a mixed nitro-potash fertiliser. The light magnesium carbonate obtained as a by-product has a bulk density of 130 g./1000 cc. and is found suitable as a filler in rubber industry. The nitro-potash obtained contains 18-19 per cent available nitrogen and 4-5 per cent potash.



NML, JAMSHEDPUR — Semi-pilot plant set up at the Laboratory for producing electrolytic manganese

CSIR PATENTS

(APPLICATION FILED)

60334: A new method for the preparation of 4-hydroxycoumarin—V. R. Shah, J. L. Bose & R. C. Shah, NCL, Poona.

The patent relates to a new, simple and economical method for the preparation of 4-hydroxycoumarin, which is the key intermediate for the preparation of anticoagulant drugs dicoumarol and tromexan and the rodenticide warfarin.

(APPLICATIONS ACCEPTED)

55289: A process for the hot-dip aluminizing of ferrous materials—A. N. Kapoor, A. B. Chatterjea & B. R. Nijhawan, NML, Jamshedpur.

56705: Low melting resistant glass compositions—Atma Ram, S. Kumar & P. Nath, CGCRI, Calcutta.

58383: A method of isolation of sapogenins—R. N. Chakravarti & M. N. Mitra, School of Tropical Medicine, Calcutta.

58554: Process for reducing hygroscopicity and caking ammonium nitrate fertilisers—E. R. Saxena, D. S. Datar & S. H. Zaheer, RRL, Hyderabad.

(APPLICATIONS SEALED)

53652: Improvements in or relating to synthetic tanning materials—D. Mukherjee & B. M. Das, CLRI, Madras.

53653: Improvements in or relating to synthetic tanning materials—D. Mukherjee & B. M. Das, CLRI, Madras.

53798: Improvements in or relating to leather manufacture—A. I. Ganesan & B. M. Das, CLRI, Madras.

53817: Manufacture of high dielectric constant ceramics—T. V. Ramamurti, C. V. Ganapathy & S. S. Mathur, NPL, New Delhi.

54040: Composition for testing of wool—S. K. Mitra & B. M. Das, CLRI, Madras.

54263: Improvements in the manufacture of titanium dioxide ceramic bodies or titanate ceramic bodies—T. V. Ramamurti, C. V. Ganapathy & S. S. Mathur, NPL, New Delhi.

54361: Construction of flat or arched roofs or like structure—C. H. Khadilkar, CBRI, Roorkee.

54394: Boron free ground coat enamels—Dr. Atma Ram & S. S. Verma, CGCRI, Calcutta.

54395: A process for the manufacture of active manganese dioxide suitable for dry batteries—U. C. Agarwala, N. R. Sanjana & J. Gupta, NCL, Poona.

54433: Enamel compositions for use on copper metal—Atma Ram & S. S. Verma, CGCRI, Calcutta.

54604: A process for the removal of pink colour and offensive smell from solid lake bitterns—M. Prasad, D. J. Mehta & R. K. Sapre, CSRI, Bhavnagar.

54713: A process for obtaining alkali fluoride from alkaline earth fluoride and/or fluorine bearing minerals like fluorspar—M. M. Singh & J. Gupta, NCL, Poona.

55602: A brick or block making machine—Dinesh Mohan & D. S. Bhatnagar, CBRI, Roorkee.

(APPLICATION SEALED IN U.K.)

763329: Improvements in or relating to ion exchangers from coal, peat, lignite or the like—R. P. Puri & P. K. Banerjee, CFRI, Jealgora.

RESEARCH PAPERS

(ABSTRACTS)

ECONOMY OF ALLOYING ELEMENTS IN STEELS—A. B. Chatterjea, NML, Jamshedpur. *East. Met. Rev.*, 10 (1957), 395.

The economisation of steel alloying elements, nickel, molybdenum, tungsten and vanadium which are in scarcity in India has been discussed. Replacement of these metals with manganese, silicon, chromium and boron is suggested in the manufacture of steel.

CONCENTRATION OF STARCH IN ROOTS OF *SALMALIA MALABARICA* DC.—P. Singh, NBG, Lucknow. *Sci. & Cult.*, 22 (1957), 634.

It has been observed that concentration of starch grains is more in lower half portion of the horizontally spreading roots, with maximum distribution along the periphery of the stipe. It is concluded that the force of gravity may have some influence on the accumulation of starch grains in the lower region.

ADVERTISEMENTS

Applications are invited for the undermentioned posts in the Council of Scientific & Industrial Research. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi. Requests for forms must specify the details of the post. The posts carry allowances permissible under the Government of India rules. Application forms duly filled in and accompanied by crossed Indian Postal Order for Rs. 7.50 (Rs. 1.87 only for Scheduled Castes and Tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

Last date for the receipt of applications, **July 22, 1957.**

CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE, MYSORE

1. **Junior Scientific Officers** (6 posts): Scale of pay, Rs. 275—25—500—EB—30—590.

2. **Senior Scientific Assistants** (4 posts): Scale of pay, Rs. 250—25—500.

3. **Junior Scientific Assistants** (5 posts): Scale of pay, Rs. 160-10-330.

CENTRAL DRUG RESEARCH INSTITUTE, LUCKNOW

1. **Senior Scientific Officer** (Botany and Pharmacognosy): Scale of pay, Rs. 350—30/2—410—30—590—EB—770—40—850.

2. **Junior Scientific Officers** (2 posts: 1 each in Biochemistry and Pharmacology): Scale of pay, Rs. 275—25—500—EB—30—590.

3. **Personal Assistant** (Tech.): Scale of pay, Rs. 275—25—500—EB—30—590.

4. **Senior Scientific Assistants** (6 posts): Scale of pay, Rs. 250—25—500.

5. **Junior Scientific Assistants** (5 posts): Scale of pay, Rs. 160-10-330.

CENTRAL LEATHER RESEARCH INSTITUTE, MADRAS

1. **Junior Scientific Officers** (2 posts): Scale of pay, Rs. 275—25—500—EB—30—590.

2. **Senior Scientific Assistant**: Scale of pay, Rs. 250—25—500.

3. **Junior Scientific Assistants** (2 posts): Scale of pay, Rs. 160-10-330.

SCHEME: STUDIES ON ISO-OLEIC ACIDS, NUTRITION RESEARCH LABORATORIES, COONOR

Senior Research Assistant: Scale of pay, Rs. 250-25-500.



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A Fortnightly News Bulletin

NEW DELHI - JULY 13, 1957 ● ASADHA 22, 1879

MEETINGS

A meeting of the *Aeronautical Research Committee* will be held at the CSIR Secretariat, New Delhi, on July 19, 1957 at 3-0 P.M. Dr. D. S. Kothari will preside.

A meeting of the *Transonic/Supersonic Wind Tunnel Sub-Committee* will be held at the CSIR Secretariat, New Delhi, on July 19, 1957 at 10-30 A.M. Air Commodore S. N. Goyal will preside.

A meeting of the *Soil Mechanics & Foundation Engineering Research Committee* will be held at the CSIR Secretariat, New Delhi, on July 31, 1957. Shri S. R. Mehra will preside.

CLRI—SIXTH DEMONSTRATION

'Manufacture of Box and Willow Uppers' is the sixth process selected for practical demonstration to representatives of the tanning industry at the Central Leather Research Institute, Madras. The demonstration commencing on July 19, 1957 is expected to continue till August 5, 1957.

Personal

* PROF. M. S. THACKER, Secretary, Department of Scientific Research & Technical Education, has been appointed a Director of the *National Industrial Development Corporation (Private) Ltd.* for a period of one year with effect from May 28, 1957, vice Shri S. S. Khera, resigned.

* PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been elected as an Honorary Fellow of the *Institute of Telecommunication Engineers, India.*

* DR. J. W. WHITAKER took charge of the office of Director,

NCL, Poona, with effect from June 24, 1957.

* The President, CSIR, has been pleased to appoint DR. K. VENKATARAMAN, Director, Department of Chemical Technology, Bombay University, as Director, NCL, Poona, with effect from Aug. 1, 1957.

* SHRI N. K. CHAKRAVARTI has been appointed Senior Scientific Officer, CRRI, New Delhi, with effect from May 18, 1957.

* SHRI B. C. MAZUMDAR, Junior Scientific Officer, CRRI, New Delhi, has been appointed Senior Scientific Officer with effect from April 26, 1957.

* SHRI N. C. CHAKRAVARTI has been appointed Junior Scientific Officer (Information), CRRI, New Delhi, with effect from May 14, 1957.

* DR. P. N. RANGACHARI has been appointed Junior Scientific Officer, RRL, Hyderabad, with effect from July 3, 1957.

* SHRI P. N. SAIGAL has been appointed Sales and Distribution Officer, Publications Directorate, CSIR, with effect from June 28, 1957.

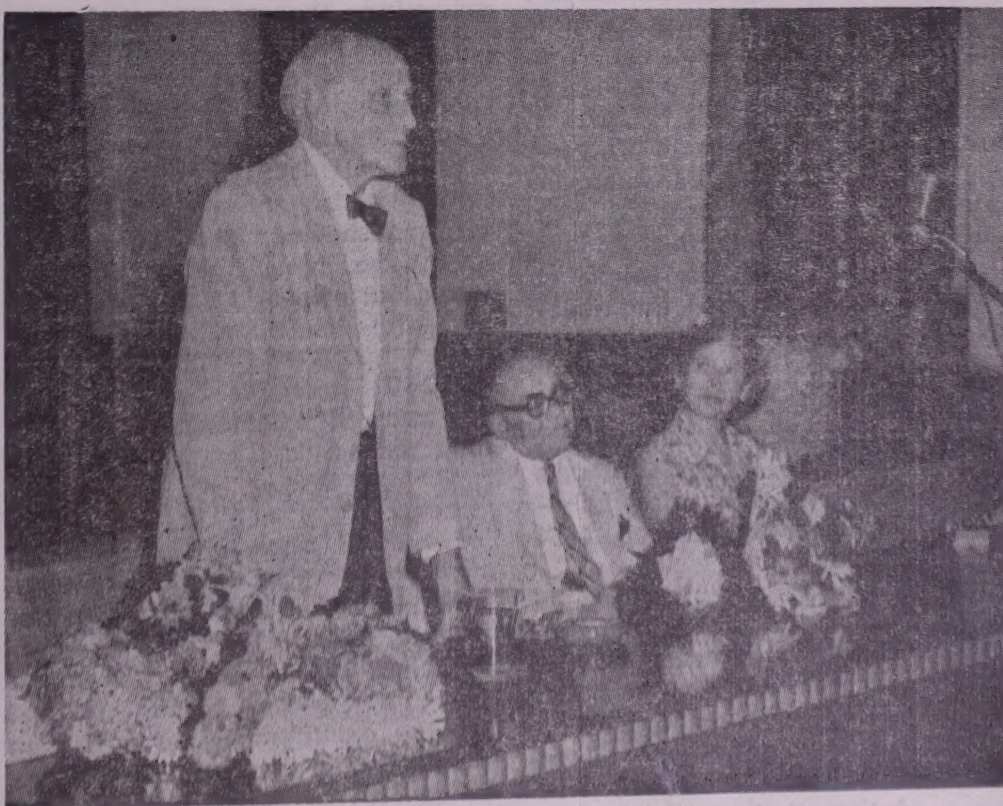
* SHRI K. S. CHANDRASEKARAN, Junior Scientific Officer, CLRI, Madras, relinquished charge of his post with effect from June 3, 1957.

* DR. A. LAHIRI, Director, CFRI, Jealgora, has been nominated a member of the *Joint Standing Committee of the Ministry of Heavy Industries (Development Wing) and the CSIR.*

* DR. A. LAHIRI, Director, CFRI, Jealgora, has been nominated a member of the *Governing Council of the Indian School of Mines and Applied Geology, Dhanbad.*

* DR. Y. NAYUDAMMA, Assistant Director-in-charge, CLRI, Madras, has been nominated a member of the *Sub-Committee* set up by the *Leather Export Promotion Council, Madras*, for evolving a scheme relating to the introduction of quality control of leather on a voluntary basis.

* DR. Y. NAYUDAMMA, Assistant Director-in-charge, CLRI, Madras, has been nominated a member of the *Forest Utilization Advisory Board, Madras State.*



NCL, POONA—Prof. G. I. Finch addressing the staff on the eve of his departure from India

BRIEFS

THE INDIAN NATIONAL COMMITTEE for the International Geophysical Year has drawn up a programme of work to be carried out in India in co-operation with the CSIR Radio Research Committee.

During the International Geophysical Year, India will have, in addition to the existing meteorological network, some sixty stations distributed all over the country. The geographical position of India with the geomagnetic equator passing through South India offers a unique opportunity for studying the electrical properties of the equatorial high atmosphere and thus to contribute fundamentally to the interpretation of such classical phenomena as the earth magnetic field, cosmic rays, ionosphere, etc.

The following are the main features of the programme sponsored by CSIR:

The National Physical Laboratory will undertake investigations on standard frequency and time service, ionospheric absorption by collective radio ions and solar flares from the atmosphere. The CSIR-Haringhatta Station will undertake investigations on ionospherics and air glow measurements. Study of aurora, air glow and ionospheric and ozone measurements will be carried out by the Ahmedabad Station. Another centre for ionospheric investigation is being set up at Trivandrum. Investigations on the nature and origin of atmospherics and study of winds will be carried out at the Banaras Hindu University and Poona University, under research schemes financed by CSIR. A Station at the Andhra University will study the travelling wave disturbances in the ionosphere.

THE PROCEEDINGS OF THE SYMPOSIUM on 'Non-ferrous Metal Industry in India' held under the aegis of the National Metallurgical Laboratory, Jamshedpur in Feb. 1954 have been published.

The publication contains 35 papers covering a wide range of subjects, such as the survey of non-ferrous minerals industry in India, beneficiation of ores, extraction and refining, preparation of alloys, electro-deposition. Mention may be made of the following papers: Manganese ore: Recent researches on dressing and present position

and scope of development; Aluminium: Extraction and refining; Preparation of alloys by aluminothermic reduction; Production and properties of titanium and zirconium; Possibility of the manufacture in India of the light metals beryllium, lithium, magnesium, tantalum and niobium; Creep-resistant alloys and lattice diffusion in free centred cubic metals; Powder metallurgy and its application to non-ferrous metals; and Use of vacuum in extractive metallurgy.

A number of papers pertaining to methods of welding, such as welding of Monel and K-Monel alloys have been included. The layout and operation of plant in the works of Indian Copper Corporation, Ghatsila have been discussed in one of the papers.

THE PROTEASES IN THE VENOM OF Russell's viper appear to be largely responsible for the toxicity and blood coagulating property of the venom. Investigations have been in progress at the Haffkine Institute, Bombay on (1) the activity of proteolytic enzymes in the venom and (2) the effect of heparin on the proteolytic activity and toxicity of the venom under a research scheme sponsored by CSIR.

Heat denatured horse haemoglobin was used as the substrate for the study of proteases. There were two pH optima for the activity, indicating the presence of two proteolytic enzymes in the venom. Heparin which inhibits the blood coagulating activity *in vitro* completely, inhibited the protease activity at pH 3.6; it only partially inhibited the activity at pH 9.0. Heparin showed protective action on the toxicity of the venom when tested on mice.

THE FOLLOWING HAVE BEEN AWARDED CSIR Research Fellowships in the research schemes noted against their names:

Senior Research Fellowship

1. SHRI B. BISWAS—Liquid crystalline detergent system (Indian Association for the Cultivation of Science, Calcutta).

2. SHRI M. V. NAYAK—Application of the phase exchange method for the demineralisation of Indian coals (Indian Institute of Science, Bangalore).

3. SHRI B. N. CHAKRABARTY—Chemical and analytical studies on air pollution in Calcutta (Univer-

sity College of Science and Technology, Calcutta).

Junior Research Fellowship

1. SHRI B. D. SHARMA—Electrochemical etching of metal and alloy crystals by multiple interferometry and other recent optical techniques (Panjab Engineering College, Chandigarh).

2. SHRI K. S. ANANTHARAMAN—Application of the phase exchange method for the demineralisation of Indian coals (Indian Institute of Science, Bangalore).

3. SHRI K. K. VASUDEVA—Recovery of elemental sulphur from pyrites bearing coal (Department of Chemical Technology, Bombay).

4. SHRI C. J. SHAH—Optical studies on etched surface of metal alloy crystals (M. S. University, S. J. Science Institute, Baroda).

CSIR PATENTS

(APPLICATION FILED)

60826: Improvements in or relating to the production of hydroxy, alkoxy or aryloxy substituted deoxybenzoins and particularly deoxyanisoin—J. L. Bose & R. C. Shah, NCL, Poona.

The patent relates to a new general methods for the production of hydroxy, alkoxy or aryloxy substituted deoxybenzoins which have potential value as intermediates for synthetic drugs and other organic chemicals. Deoxyanisoin, an important intermediate for the preparation of synthetic oestrogens, stilbestrol and hexestrol, is obtained in good yields by this method.

(APPLICATIONS ACCEPTED)

56725: A new process for the purification of selenium—D. N. Sen & J. Gupta, NCL, Poona.

58243: A process for the separation of sodium sulphate from mixture of sodium sulphate and sodium chloride—R. K. Sapre & S. D. Buch, CSRI, Bhavnagar.

(APPLICATIONS SEALED)

54650: Process for the removal of pink colour from Sambhar lake brine—Mata Prasad, D. J. Mehta & R. K. Sapre, CSRI, Bhavnagar.

54676: An improved method for the preparation of titanium tetraiodide—P. P. Bhatnagar & R. A. Sharma, NML, Jamshedpur.

55768: A process for arresting the fermentation of vegetable tanliquors—Y. Nayudamma & J. B. Rao, CLRI, Madras.

National Laboratories

National Chemical Laboratory, Poona

Liquid Rubber

Liquid rubber (100 per cent rubber in fluid form) can be used for making rubber articles by simple casting or spreading. A dark coloured liquid rubber of thick consistency has been produced in the Laboratory. It can be mixed with the usual rubber compounding ingredients, poured into moulds of sheet metal, wood or plaster, spread by spraying or brushing and set by exposure to hot air. No mixing mill, press, or steam vulcaniser is required for making rubber articles.

Trials on the use of liquid rubber for making printing rollers are in progress.

National Metallurgical Laboratory, Jamshedpur

Packing Density Apparatus

An apparatus has been fabricated for determining the packing density of powders. It consists of two coaxial brass cylinders machined to

fit into each other. A known weight of the powder, the packing density of which is to be determined, is introduced into the external cylinder and the light inner cylinder which is graduated at the side is slid in to keep the material in position. The assembly is given a number of bumps by means of a motor-driven cam. After compaction, the height of the inner cylinder is read and the volume and the packing density of the powder is calculated. By using mixtures of different grain sizes, the optimum proportion for maximum packing density can be arrived at. The data are useful for formulating conditions of the manufacture of refractories having specific properties.

Nickel-free Stainless Steel

A nickel-free stainless steel composition (containing Cr, 21; Mn, 12.6; and N, 0.8 per cent.) has been evolved. The steel produced is austenitic in structure and can replace the standard 18/8 steel for a multitude of applications including the fabrication of utensils.

Central Drug Research Institute, Lucknow

Peptic Ulceration

Investigation on the causative factors for peptic ulceration are under progress. Acute peptic ulceration was produced in guinea pigs protected against toxic effects by antihistaminic promethazine hydrochloride and the damage caused to gastric mucosa was studied. The damage varied from erosion to perforation accompanied by congestion and oedema. A correlation was found between free acidity and the degree of ulceration.

Central Building Research Institute, Roorkee

Water-proofing of Masonry Walls

A water proof coating solution for masonry walls, utilizing cheap and readily available materials, has been evolved. Coating of burnt brick panels by a hot solution (containing 5 per cent soap and 1 per cent alum) prevented moisture penetration when water was continuously sprayed (1 gal. per min. = 3-4 in. of rain per hr.) for 6 hr. Untreated control panels permitted the penetration of moisture in just over an hour.

Central Road Research Institute, New Delhi

Soft Aggregates in Road Construction

Hard stone has so far been used for all-weather road construction in India with the result that in areas where hard stone is not available, the cost of construction is high.

Studies in progress at the Institute have shown that soft aggregates from Rajasthan are suitable for use as road construction material. The aggregates have been classified into four groups according to their gradation and physical characteristics, and specifications have been suggested for their use in road construction. Work is being extended to other areas.

Road Pavements

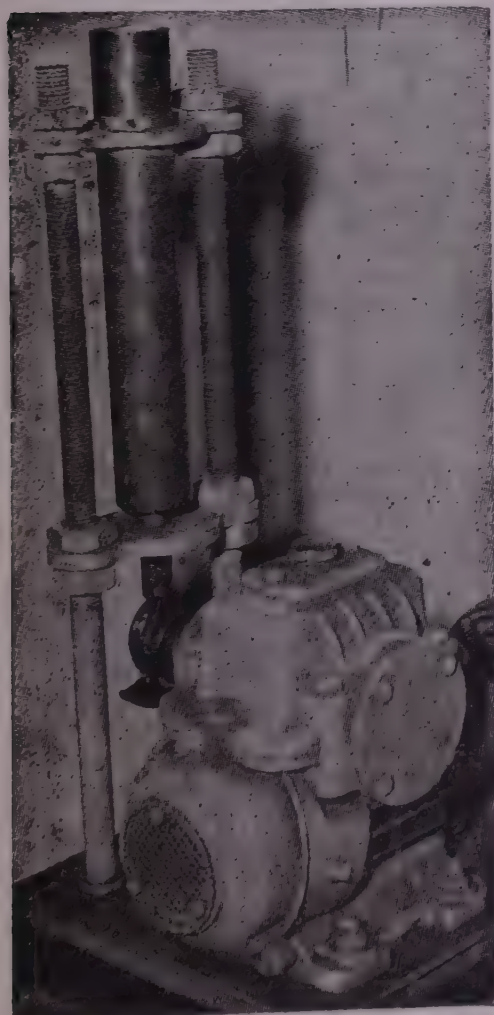
A field investigation of pavements in some parts of North-Western India, which have been affected by the recent floods, has been carried out. The investigation has revealed that the susceptibility of subgrades is due to the rising water table. Remedial measures have been suggested to protect subgrades in similar situations at reasonable cost. The suggested measures can be adopted for providing improved road facilities at reasonable cost especially in water-logged and deltaic areas.

RESEARCH PAPERS

ON REACTION IN THE SOLID STATE—
G. I. Finch & K. P. Sinha, NCL, Poona. *Proc. Roy. Soc.*, 239A (1957), 145.

Using the concept of phonon-lattice interaction, an expression is derived for the minimum temperature of a solid at which it may enter into solid-state reaction. This expression leads to a more precise idea of single-component reaction (sintering) temperatures than those given by Hutting.

Reaction between two different solids has been re-examined in the light of their physical and crystallographic properties. The rate law for such an additive reaction has been deduced from the quantum rate theory. It is concluded that crystallographic phase transformations and the formation of transitional superstructures constitute the phase-boundary processes and that the kinetics are governed by the dynamics of the diffusion process.



NML, JAMSHEDPUR—Packing density apparatus fabricated in the Laboratory

A NEW SUPERSTRUCTURE OF NICKLE OXIDE—G. I. Finch & K. P. Sinha, NCL, Poona. *Trans. Faraday Soc.*, 53 (1957), 623.

The transfer of some cations from octahedral to tetrahedral interstices in the framework of oxygen ions of some oxides results in the formation of superstructures. A normally unstable phase of nickel oxide, not of rock salt structure, can be stabilized in thin films by the introduction of vacancies or traces of impurity atoms. The structure, as examined by electron diffraction, is best described as a metal excess spinel.

A SIMPLE LOGARITHMIC RATIO-RECORDING SPECTROPHOTOMETER ATTACHMENT—P. Hariharan & M. S. Bhalla, NPL, New Delhi. *J. Opt. Soc. Amer.*, 47 (1957), 378.

A double beam system is described which uses a single photomultiplier tube operated in a logarithmic difference circuit to give direct readings of log transmittance. The circuit compensates for changes in the incident energy, as well as variations in the spectral sensitivity of the photo-cathode over a very wide range.

The attachment can be used to convert any good monochromator into a recording spectrophotometer and permits measurements of spectral densities as high as 3 with an accuracy better than 0.02 density unit.

FREEZING POINTS OF LIQUIDS ADSORBED ON POROUS SOLIDS—B. R. Puri, Chemistry Department, Panjab University, Hoshiarpur. *Trans. Faraday Soc.*, 53 (1957), 530.

Freezing point depressions of benzene, dioxane, p-xylene and ethylene diamine adsorbed on four different porous bodies at different relative vapour pressure corresponding to condensation in capillary pores of different radii have been determined. The liquids condensed in capillary pores of extremely small radii do not freeze even up to several degrees below their normal freezing points and that the freezing point depression of an adsorbate depends largely on the radius of the capillary pores in which it is condensed.

The values agree fairly well with those calculated from thermodynamic considerations based on the theory of capillary condensation.

ADVERTISEMENT

Applications are invited for the undermentioned posts. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Requests for forms must specify the details of the post.

The posts carry allowances permissible under the Government of India rules.

Application forms duly filled in and accompanied by crossed Indian postal orders for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

NATIONAL CHEMICAL LABORATORY,
POONA

Deputy Director: Scale of pay, Rs. 1600—100—1900. Higher start in salary can be given to an especially well qualified candidate.

QUALIFICATIONS

High academic qualifications in science, preferably D.Sc. or Ph.D. degree in chemistry; (2) at least 10 years' general experience and proved ability to supervise and co-ordinate research work in various branches of chemistry and chemical industry; (3) original and outstanding contributions in the field of fundamental and/or applied chemistry; and (4) sound knowledge of practice and modern techniques in chemical industries.

Last date for the receipt of applications, **Aug. 31, 1957.**

CENTRAL LEATHER RESEARCH
INSTITUTE, MADRAS

1. Senior Scientific Officers Grade I (2 posts): Scale of pay, Rs. 600—40—1000—E.B.—50/2—1150.

QUALIFICATIONS: For one post—A doctorate in chemistry or leather chemistry with high academic and research record and ability to plan, conduct, collate and direct researches on problems connected with leather science, particularly related to chemistry and physics. Experience in leather research and published papers desirable. For 1 post: A Ph.D. degree and high academic and research record in one or more branches of biology with ability to lead and guide a team of research workers engaged in these field. Research experience in leather technology desirable.

2. Senior Scientific Officers Grade II (3 posts): Scale of pay, Rs. 350-30/2-410-30-590-EB-30-770-40-850.

QUALIFICATIONS: For one post—A degree in leather technology. Knowledge and experience of leather industry with ability to collect and correlate information related to leather industry and to disseminate results of scientific research into the trade. Experience in publicity and journalistic work in leather field desirable. For 2 posts—A doctorate degree in physical, organic, inorganic, analytical or leather chemistry with adequate research experience and published papers.

Last date for the receipt of applications, **August 13, 1957.**

CENTRAL BUILDING RESEARCH
INSTITUTE, ROORKEE

1. Senior Scientific Officer Grade II: Scale of pay, Rs. 350-30/2-410-30-590-EB-30-770-40-850.

QUALIFICATIONS: An engineer with varied experience in buildings and civil engineering, having published technical papers and reports to credit.

2. Junior Scientific Officers (4 posts): Scale of pay, Rs. 275-25-500-EB-30-590.

QUALIFICATIONS: For 2 posts—High second class degree in civil engineering or equivalent qualification. Practical experience in a soil engineering laboratory or on earth construction projects would be additional qualification. For 1 post: High second class degree in civil engineering or equivalent qualification. Practical experience of research or experience in the field or in a design office would be an additional qualification. For 1 post: B.E. (Civil) or passed section 'A' and 'B' examinations of the Institution of Engineers (India) with 5 years' field experience.

Last date for the receipt of applications, **August 13, 1957.**

CENTRAL FOOD TECHNOLOGICAL
RESEARCH INSTITUTE, MYSORE

(Scheme: Utilization of oilseed meals in the preparation of processed protein supplements suitable for human consumption.)

Assistant Research Officers (2 posts): Scale of pay, Rs. 275—25—500—E.B.—30—590.

QUALIFICATIONS: For one post—M.Sc. or Ph.D. in chemistry with at least 3 years' research experience in biochemistry and nutrition with good record of published work. For other post—B.E. degree in mechanical engineering preferably with experience in workshop or industry.

Last date for the receipt of applications, **August 13, 1957.**



CSIR NEWS

A Fortnightly News Bulletin

NEW DELHI - AUG. 10, 1957 ● SRAVANA 19, 1879

ANNOUNCEMENTS

CLRI — MANUFACTURE OF E.I. KIPS AND SKINS

'Manufacture of E.I. Kips and Skins' is the seventh process selected for practical demonstration at the Central Leather Research Institute, Madras. The demonstration which commenced on Aug. 8, 1957 is expected to continue till Sept. 16, 1957.

SYMPOSIUM

UTILIZATION OF INDIAN MEDICINAL PLANTS

A symposium on the *Utilization of Indian Medicinal Plants* will be held at the Central Drug Research Institute, Lucknow, in the second week of October 1957, under the auspices of the Pharmaceuticals and Drugs Research Committee. The scope of the symposium will be as follows:

1. Distribution of medicinal, poisonous, insecticidal and essential oil-bearing plants of India and the quantities available for collection.
2. Possibilities of utilizing indigenous drugs as substitutes for British and other recognized pharmacopoeial drugs.
3. Cultivation of indigenous drug plants and introduction of useful exotic plants.
4. Pharmacognostic studies and identification.
5. Standardization of crude drugs.
6. Biogenesis, chemistry, pharmacology and chemotherapy of active principles of drug plants.
7. Therapeutic uses of crude drugs and finished products.

8. Commercial aspects, with particular reference to import, export, distribution and storage of indigenous crude drugs.

Those desirous of participating in the symposium may send their papers along with abstracts of about 250 words to Dr. D. L. Shrivastava, Secretary, Pharmaceuticals & Drugs Research Committee, Central Drug Research Institute, Lucknow, so as to reach him by Sept. 1, 1957.

MEETINGS

The third meeting of the *Scientific Advisory Committee* of the Central Road Research Institute, New Delhi, will be held at the Conference Room of the Institute on Aug. 12, 1957. Prof. S. R. Mehra will preside.

The third meeting of the *Executive Council* of the CRRI, New Delhi, will be held at the Conference Room of the Institute on Aug. 21, 1957. Shri Jagjivan Ram, Minister for Railways will preside.

A meeting of the *Road Research Committee* will be held at the Conference Room of CRRI, New Delhi, on Aug. 21, 1957. Shri H. P. Sinha will preside.

A meeting of the *Public Health Engineering Research Committee* will be held at the CSIR Secretariat, New Delhi on Aug. 21, 1957 at 3-30 P.M. Shri N. V. Madok will preside.

The meeting of the *Transonic/Supersonic Wind Tunnel Sub-Committee* which was announced to be held on July 19, 1957 (*CSIR News*, Vol. 7, No. 13, p. 1) has been cancelled.

THE PRESIDENT, DR. RAJENDRA Prasad visited the Regional Research Laboratory, Hyderabad on July 30, 1957. He was received and shown round by Dr. Hussain Zaheer, Director, RRL. Dr. Rajendra Prasad showed keen interest in the work of the Laboratory and recorded his impression (given below) in the Distinguished Visitor's Book:

'I have been very pleased to see the very valuable work that has been going on in this Laboratory. The country requires laboratories that will carry out research with special reference to conditions prevailing and the materials available in this country so that they may be used straightaway by our industrialists and others in the development of our industries. I am happy that this Laboratory is serving that purpose. The enthusiasm and devotion of the workers engaged here are admirable and hold out much promise for the future. I am thankful for the opportunity offered to me to see it with my own eyes.'

* * *

DR. MONO MOHAN DAS, Union Deputy Minister for Education and Scientific Research, visited the Central Fuel Research Institute, Jealgora, on July 10, 1957. He was received by Dr. A. Lahiri, Director, CFRI, who took him round. Dr. Das showed keen interest in the researches and other scientific activities of the Institute.

Personal

* PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been appointed a Trustee of the *National Book Trust*, recently set up by the Government of India.

* PROF. M. S. THACKER has been invited to become a member of the Governing Body of the *National Council of Applied Economic Research*, New Delhi. Prof. Thacker has accepted the invitation.

* DR. A. L. MUDALIAR, Vice-Chancellor, Madras University and Member, Board of Scientific & Industrial Research, has been appointed a Trustee of the *National Book Trust*.

* * *

* SHRI M. P. DIR has been appointed Senior Scientific Officer, CRRI, New Delhi, with effect from July 1, 1957.

(Contd. on p. 4, col. 1)

BRIEFS

STUDIES ON THE utilisation of blast furnace slag in cement making have been in progress since Nov. 1954 at the Department of Applied Chemistry, Calcutta University under a research scheme financed by CSIR.

Preliminary investigations of tensile strength of granulated blast furnace slags from Tata Iron & Steel Co. Ltd. and Indian Iron & Steel Co. Ltd. indicated that they are eminently suitable for the manufacture of Portland blast furnace cement and mixture containing 90 per cent slag and only 10 per cent Portland cement developed strength after 3 months which compares favourably with Portland cement.

Investigations on compressive strength of concrete (which simulates service conditions more closely than mortar with standard sand), durability, sulphate resistance and heat of hydration have been carried out.

The results lead to the following conclusions: Slag-cement mixtures are comparable to Portland cement in compressive strength and durability. The grindability of Portland cement clinker and slag samples were similar. In sulphate resistance and heat of hydration also, slag cement and Portland cement give comparable values. Calcium oxide, magnesium oxide, gypsum and anhydrite activate the rate of strength (tensile) development of slag cement (90:10).

The effect of wet grinding and keeping of wet slag with or without the addition of gypsum was studied. When gypsum was added during wet-grinding, appreciable setting took place even after 7 days. But when grinding was done without the addition of gypsum, the slag could be stored up to one month without any effect on its hydraulicity.

INVESTIGATIONS ON THE production of maleic anhydride by the catalytic oxidation of benzene, using the fluidized bed technique have been in progress at the Shri Ram Institute for Industrial Research, Delhi under a research scheme financed by CSIR. Maleic anhydride is one of the primary chemical intermediates required for the plastic and paint industry. It is not manufactured in India at present.

The investigations have led to the following conclusions: (1) Maleic acid in 90 per cent yield is obtained using a catalyst composition consisting of equal parts of vanadium and molybdenum oxides modified with lithium, sodium and phosphorus salts; (2) when impregnated on alundum carrier, the catalyst does not lose its activity either on continuous running or after prolonged use. Also, it permits feeding of higher quantities of benzene per unit volume of the catalyst and the ratio of air to benzene can be brought down to 66.5:1 (by volume) without affecting the yield; and (3) stainless steel is recommended as constructional material for the plant; mild steel is unsuitable.

THE CENTRAL FUEL Research Institute has recently issued the following reports on the physical and chemical survey of coalfields for the year 1956: (1) Report of the Jharia Coal Survey Station (2) Report of the Regional Coal Survey Station, Raniganj (3) Report of the Coal Survey Station, Ranchi (4) Report of the Regional Coal Survey Station, Bilaspur.

Jharia Coal Survey—During the year 19 overall, 4 run of mine, 3 seam and 96 foot-by-foot and band samples were collected and investigated. The run of mine and seam samples, when studied for large-scale washability tests, revealed the following characteristics: when washed at 1.50 sp. gr. Lodna XI/XII (combined) seam gave 80.62 per cent clean coal (ash, 16.1 per cent) suitable for manufacture of metallurgical coke and 15.2 per cent middlings (ash, 31.5 per cent) suitable for power generation. No. IX seams on the average yielded 45-50 per cent clean coal (ash, 19-20 per cent) of metallurgical grade and 40 per cent middlings.

A considerable amount of work has been done in connection with the Central (Coal) washery to be set up at Dugda in the Jharia coalfield. In all 62 samples were drawn for washability tests from 16 collieries; preliminary tests on No. 1 seam coal have revealed its suitability for blending (even without washing) for the manufacture of metallurgical coke.

PHTHALIC ANHYDRIDE—A new process for the production of phthalic anhydride from coal tar fraction has been developed at the

Central Fuel Research Institute, Jeolgora (Indian Pat. No. 54960). Pilot plant investigation of this process is to be assisted by a grant of Rs. 2 lakhs from the National Research Development Corporation of India.

PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, inaugurated the *Association of Scientific Workers of India Unit* at the Central Building Research Institute, Roorkee on Aug. 2, 1957. Inaugurating the Unit, Prof. Thacker averred that the Association of Scientific Workers of India has a great responsibility and duty towards the people of this country in developing their scientific consciousness. He was happy to say that the Association, apart for trying to better the conditions of scientific workers, has been fulfilling their responsibilities. Prof. Thacker wished the new unit success in its task.

SHRI V. P. NANDA, Panjab University, Hoshiarpur, has been selected for practical training in Microwaves at Agra (CSIR News, Vol. 7, No. 14, p. 2) in place of Shri Darshan Singh.

THE FOLLOWING have been awarded CSIR Junior Research Fellowships in the research schemes noted against their names:

1. SHRI KIRON KUMAR KUNDU—*Non-aqueous acid-base titration* (College of Engineering & Technology, Calcutta).

2. SHRI KANAI LAL SAHA—*Quantum mechanics of molecular interactions* (University College of Science & Technology, Calcutta).

3. SHRI T. KRISHNAMURTY—*Studies on pigments of Indian lichens* (Andhra University, Waltair).

4. SHRIMATI L. V. ASOLKAR—*Liquid crystalline detergent system* (Indian Association for the Cultivation of Science, Calcutta).

THE RESEARCH SCHEME, *Construction of light scattering apparatus*, under investigation at the Indian Association for the Cultivation of Science, Calcutta is being terminated with effect from Sept. 1, 1957.

We regret to announce the death of Shri R. B. Gangoly, Electrical Engineer, NML, Jamshedpur, on Aug. 3, 1957.

National Laboratories

National Chemical Laboratory, Poona

Estimation of Titanium

A sensitive spectrophotometric method has been developed for the estimation of microgram quantities of titanium. The method is based on the formation of pink complex between phenylfluorone and tetravalent titanium in the acid range.

Evaluation of Sandalwood Oil

A new infra-red method for the evaluation of sandalwood oil, based on the quantitative estimation of cyclopropane ring, has been developed. The method is useful for the detection of adulterants in sandalwood oil; it is also useful for the detection of sandalwood oil used as an adulterant in Indian vetiver oil.

National Metallurgical Laboratory, Jamshedpur

Nickel-free Stainless Steel

A research project for the development of nickel-free stainless steel has been in progress at the Laboratory for some time (CSIR News, Vol. 7, No. 13, p. 3). Steel compositions containing: Cr, 21; Mn, 14; Cu, 1 and N, 0.6 per cent, have been made and tested for mechanical and corrosion resistant properties. The results show that some of the steels have corrosion resistance comparable to that of standard 18/8 steel.

Stabilised Dolomite Bricks

The feasibility of utilizing silica rock or magnesium silicate rock as stabiliser for the production of stabilised dolomite bricks has been examined and optimum conditions for grinding, forming and firing the mixes have been investigated. Stabilised dolomite bricks developed at the Laboratory possess refractoriness under load, high corrosion resistance and moderate spalling resistance. The bricks are suitable for use in steel furnaces as partial replacement for the more expensive magnesite bricks.

Central Glass & Ceramic Research Institute, Calcutta

Dental Porcelain

Artificial porcelain teeth have been made from compositions

developed at the Institute, in 15 shades, according to De Tray's shade guide. Sets of 28 teeth were assembled by soldering gold-coated nickel pins to palladium cartridges fixed in the teeth. Test reports on the assemblies are encouraging, arrangements are being made for their manufacture locally.

Low Temperature-Vitrifying Ceramic Wares

Earthenware bodies vitrifying at low temperatures for use in the manufacture of inexpensive crockery have been developed, utilizing clay shale occurring extensively at Mandsaur (Madhya Pradesh). Besides, experiments show that porcelain for electrical purposes could also be manufactured by utilizing the shales.

Central Food Technological Research Institute, Mysore

Curing of Harvested Paddy

Rice from freshly harvested paddy cooks to a pasty consistency, has poor swelling capacity during cooking, and causes digestive disorders. Investigation undertaken at the Institute show that the cooking property can be improved by suitable 'Wet Heat' treatment.

Steaming of fresh paddy for 15-30 min. and heaping hot paddy for 1-2 hr. before drying under aeration in shade, yield rice which combines the cooking qualities of old raw rice and the nutritional properties of parboiled rice.

Central Road Research Institute, New Delhi

Bituminous Surface Dressings

Full scale field experiments using different specifications which are in vogue in foreign countries for bituminous surface dressings have been conducted in order to arrive at the best possible design for use in various highway and street systems in India. The results achieved so far, when implemented, are expected to lead to considerable economy and better performance.

Experiments are in progress for formulating Indian specifications in the light of Indian traffic and climatic conditions.

Central Drug Research Institute, Lucknow

Virulence of Ranikhet Virus

A virulent strain of Ranikhet disease virus is rendered avirulent to fowls when treated with adenylic acid *in vitro* or when fowls are administered adenylic acid within 1 hr. of infection. Adenylic acid, however, has no effect on the virulence of the virus, when administered to fowls 6-18 hr. after infection.

CSIR PATENTS

(APPLICATIONS FILED)

60556: A new method for the manufacture of spherical crystals of alkali halides—G. I. Finch, B. K. Shukla & D. J. Mehta, CSRI, Bhavnagar.

The patent relates to the crystallisation of sodium chloride and other alkali halides from their respective aqueous solutions. The conditions favour the formation of spherical crystals.

Spherical crystals decrease the critical bulk angle of repose, minimise tendency of crystals to cake together, enable crystals to be coated with a continuous coherent protective coating against atmospheric humidity and minimise ratio of surface area to mass of crystals.

644685 (U.S.A.) and 8138 (U.K.): An improved compensator for transformers—P. V. Rao, Indian Institute of Science, Bangalore.

The patent pertains to compensators of the type used in Transformer Analogue Computers. Compensators developed earlier suffer from the serious drawback that the degree of compensation is not quite constant over the normal working range of voltage.

By using the improved compensator, it is possible to compensate for the exciting current by more than 97 per cent and to maintain this high degree of compensation over the entire working range, without readjustment of linear resistances.

12879/57 (U.K.): Isolation of ketosteroid from *Lantana camara* Linn.—V. N. Sharma & K. N. Kaul, NBG, Lucknow.

Process for isolating Lancamarone ($C_{28}H_{40}O_4$), with properties of a keto-steroid with butenolide grouping

(contd. from p. 1, col. 3)

* **SHRI P. RAY CHAUDHURI** has been appointed Senior Scientific Officer, CRRI, New Delhi, with effect from July 4, 1957.

* **DR. V. R. RAMANATHAN**, Senior Scientific Assistant, CECRI, Karai-kudi, has been appointed Junior Scientific Officer.

* **SHRI N. SUBRAMANIAN**, Senior Scientific Assistant, CECRI, Karai-kudi, has been appointed Junior Scientific Officer.

* **SHRI ARUN KUMAR BOSE**, Senior Scientific Assistant, CFRI, Jealgora, has been appointed Junior Scientific Officer.

* **DR. B. R. NIJHAWAN**, Director, NML, Jamshedpur, has been nominated a member of the *Expert Committee on Metallurgical Engineering* by the All India Board of Technical Studies in Engineering & Metallurgy.

RESEARCH PAPERS

UTILIZATION OF PHOSPHORUS BY STREPTOMYCES GRISEUS DURING ITS AEROBIC AND ANAEROBIC GROWTH— S. C. Roy, University College of Science & Technology, Calcutta. *Arch. Biochem. Biophys.*, **63** (1956), 26.

Phosphorus utilization by *S. griseus* has been discussed during its growth both under aerobic and anaerobic conditions. Chromatographic analysis of phosphate esters present in the mycelial extracts of *S. griseus* has indicated that the organism preferentially follows the Embden-Meyerhof pathway of glucose breakdown during anaerobiosis and the hexose monophosphate shunt during aerobiosis.

KINETICS OF CATALYTIC HYDROLYSIS OF DEXTRIN BY HYDROGEN ION-EXCHANGERS— K. S. Anand & R. P. Puri, Central Fuel Research Institute, Jealgora. *J. Instn Chem. (India)*, **29** (1957), 79.

A study of the kinetics of hydrolysis of dextrin to reducing sugars with H-carbon, Zeokarb H₁, Zeokarb H₂₁₅ and Dcwex 50 is described. The reaction is pseudo molecular and the rate of hydrolysis is dependent on the surface area of the catalyst, exchange capacity and the porosity of the ion-exchanger as a whole.

Applications are invited for the undermentioned posts. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Requests for forms must specify details of the post.

The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well qualified candidates.

Application forms duly filled in and accompanied by crossed Indian postal orders for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

Last date for the receipt of applications, **Aug. 31, 1957.**

NATIONAL PHYSICAL LABORATORY, NEW DELHI.

(I.S.I. Scheme on Improving the shaping and connections in light gauge steel for structural use)

1. Junior Scientific Officer: Scale of pay, Rs. 275—25—500—E.B.—30—590.

QUALIFICATIONS: Degree or post-graduate diploma in mechanical, civil or aeronautical engineering; 3 years' experience in structural research and design with light gauge materials.

2. Senior Scientific Assistant: Scale of pay, Rs. 250—25—500.

QUALIFICATIONS: Degree or post-graduate diploma in mechanical, civil or aeronautical engineering; 2 years' experience in structural design and handling of testing equipment.

NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR

1. Senior Scientific Officer Grade I: Scale of pay, Rs. 600—40—1000—50/2—1150.

QUALIFICATIONS: First class graduate in metallurgy; 8-10 years' experience in research and metallurgical industry, including melting of ferrous and non-ferrous castings, sand technology, metallography and heat treatment.

2. Junior Scientific Officers (2 posts): Scale of pay, Rs. 275—25—500—E.B.—30—590.

QUALIFICATIONS: For one post—First class degree in metallurgy; research experience in metallography and heat treatment of metals and alloys; adequate practical training in metallurgical work and conversance with research methods. For the second post—First class M.Sc. or Bachelor in metallurgy with good research experience; conversance with general metallurgical problems, theories of alloys and corrosion.

CENTRAL DRUG RESEARCH INSTITUTE, LUCKNOW

Senior Scientific Officer: Scale of pay, Rs. 350—50/2—410—30—E. B.—30—770—40—850. or Rs. 600—40—1000—50/2—1150.

QUALIFICATIONS: M.B.B.S. and/or post-graduate degree in pharmacodynamical and endocrinological techniques with 5 years' research experience; experience in electroencephalographic work and ability to conduct independent research desirable.

CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE, KARAIKUDI

1. Senior Scientific Officer: Scale of pay, Rs. 350—30/2—410—30—590—E.B.—30—770—40—850 or Rs. 600—40—1000—50/2—1150.

QUALIFICATIONS: At least second class M.Sc. in physics or physical chemistry with a good record of research; sound knowledge of modern theories of semi-conductors; experience of work on semi-conductors desirable.

2. Senior Scientific Assistants (2 posts): Scale of pay, Rs. 250—25—500.

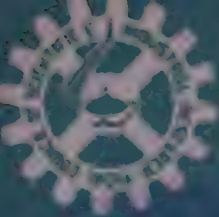
QUALIFICATIONS: For one post—At least second class M.Sc. in physical chemistry or physics with research experience; good knowledge of chemical physics desirable. For the second post—Degree in electrical engineering or metallurgy; experience in handling electrothermal equipment desirable.

INDIAN INSTITUTE OF SCIENCE, BANGALORE

(CSIR Scheme on Study of the behaviour of soils under heavy machine foundations)

Senior Research Assistant: Scale of pay, Rs. 250—25—500.

QUALIFICATIONS: First class or high second class B.E. in civil or mechanical engineering with aptitude for engineering research; knowledge of soil mechanics and/or vibration desirable.



CSIR NEWS

A Fortnightly News Bulletin

NEW DELHI - AUG. 24, 1957 ● BHADRA 2, 1879

MEETING

A meeting of the *Biological Research Committee* will be held at the CSIR Secretariat, New Delhi on Sept. 2, 1957 at 10-30 a.m. Prof. P. Maheshwari will preside.

Personal

*DR. S. A. SALETOR, Asstt. Director, RRL, Hyderabad, will look after the work of the Director, RRL, with effect from Aug. 26, 1957 in the absence of Dr. S. Husain Zaheer, who has been granted leave from Aug. 25 to Oct. 7, 1957.

*SHRI Y. K. RAGHUNATHA RAO, Senior Scientific Officer, CFTRI, Mysore, has been appointed Assistant Director (Food Engineering Division) with effect from July 15, 1957.

*DR. R. RAJAGOPALAN has been appointed Senior Scientific Officer, CFTRI, Mysore, with effect from Aug. 1, 1957.

*SHRI M. R. PARTHASARTHY has been appointed Senior Scientific Officer, CBRI, Roorkee, with effect from June 3, 1957.

*DR. A. K. KAMAL has been appointed Senior Scientific Officer, CEERI, Pilani, with effect from Aug. 5, 1957.

*DR. N. KRISHNASWAMY, Junior Scientific Officer, NCL, Poona, has been appointed Senior Scientific Officer on promotion.

*SHRI B. K. SARIN, Junior Scientific Officer, RRL, Hyderabad, has been appointed Officer-in-charge, Hyderabad Coal Survey Station, with effect from June 12, 1957.

*DR. B. C. BANERJEE, Senior Scientific Assistant, NCL, Poona, has been appointed Junior Scientific Officer on promotion.

*DR. S. L. BAFNA, Senior Scientific Assistant, NCL, Poona, has been appointed Junior Scientific Officer on promotion.

*SHRI S. S. SUBRAMANIAN, Senior Scientific Assistant, NCL, Poona, has been appointed Junior Scientific Officer on promotion.

*DR. C. G. BALACHANDRAN, Senior Scientific Assistant, CBRI, Roorkee, has been appointed Junior Scientific Officer with effect from July 6, 1957.

*SHRI S. SUNDARARAJAN, Accounts Officer, CMRS, Dhanbad, has been transferred to CFRI, Jealgora, with effect from Aug. 12, 1957.

*DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been appointed member, Board of Directors of Hindustan Antibiotics Ltd., Pimpri.

*SHRI N. V. RAGHUNATH, Asstt. Director, CGCRI, Calcutta, has been nominated a member of the *Electrical Insulators and Accessories Sectional Committee* of the Indian Standards Institution. Dr. S. S. Mondal, Junior Scientific Officer has been nominated alternate member.

*DR. A. NAGARAJA RAO, Chief Industrial Adviser, Ministry of Commerce & Industry, New Delhi, has been nominated Chairman, *Chemical Research Committee*, CSIR, vice Dr. K. Venkataraman with effect from Aug. 5, 1957.

*DR. B. D. KALELKAR, Industrial Adviser (Engineering), Ministry of Commerce & Industry, New Delhi, has been nominated a member of the *Internal Combustion Engines & Gas Turbines Research Committee*, CSIR, with effect from June 8, 1957.

*DR. T. S. SUBRAMANIAM, Director, ATIRA, Ahmedabad, has been nominated a member of the *Cellulose Research Committee*, CSIR, and also CSIR's representative on the *Technological Research*

Sub-Committee of the Indian Central Cotton Committee.

*DR. H. R. CHIPALKATTI has been nominated Investigator-in-charge of the research scheme, *Studies in the viscosity of cellulose solutions*, under investigation at the Shri Ram Institute for Industrial Research, Delhi.

*SHRI P. S. VENKATACHALAM, Junior Scientific Officer, CLRI, Madras, has been awarded the M.Sc. degree by the Madras University for his thesis, *Studies on semichrome tannage.*

CSIR PATENTS

(APPLICATIONS FILED)

60827: *Isolation of a therapeutically active antibiotic and antiviral principle from Withania somnifera*—P.A. Kurup, CDRI, Lucknow.

The preparation of a therapeutically active principle from *W. somnifera* which may find possible use for (i) topical application in the treatment of ulcers, carbuncles and other septic conditions (ii) as a systemic antibiotic and (iii) as an antiviral agent is covered by the patent.

60863: *A process for the production of 1-ethoxy-2-hydroxy-propenyl benzene and for isomerisation of 1-ethoxy-2-methoxy-4-allyl benzene*—S. Mahboob, V. D. N. Sastri, K. Ramchandran & S. Husain Zaheer, RRL, Hyderabad.

The patent relates to the method of production of 1-ethoxy-2-hydroxy propenyl benzene, a flavouring agent about 20 times as strong as vanillin, from 1-ethoxy-2-methoxy-4-allyl benzene and isomerisation of 1-ethoxy-2-methoxy-4-allyl benzene to 1-ethoxy-2-methoxy-4-propenyl benzene (trans form) in quantitative yield.

60866: *A process for the preparation of an absorbent clay from alluvial soils (chikni mitti) for the recovery of vitamin B₂ (riboflavin) from natural sources or fermented products*—S. C. Aggarwala & T. Sen, CDRI, Lucknow.

The invention relates to the processing and production of an absorbent clay from local samples of alluvial soil (*chikni mitti*) for use in the adsorption and isolation of vitamin B₂ (riboflavin) from natural materials or fermented products. High recoveries of vitamin B₂ are possible using this processed sample of *chikni mitti*.

BRIEFS

PROPERTIES OF CAPILLARY-HELD liquids are under study in the Panjab University, Hoshiarpur, under a research scheme financed by CSIR (CSIR News, Vol. 7, No. 3, p. 2).

Boiling point elevations and isosteric heats of adsorption of chloroform, benzene, dioxane, acetone and ethyl alcohol adsorbed on silica gel, alumina gel and bentonite at different relative vapour pressures have been determined and the values compared with those obtained on the basis of the theory of capillary condensation.

The critical relative vapour pressure (*i.e.* vapour pressure above which there is close agreement between the two values) varies from 0.322 to 0.540, depending upon the nature of the adsorbate. The critical capillary radius (*i.e.* capillary radius above which there is close agreement between the two values) depends on the molecular thickness (D) of the adsorbate and varies from 3.0 to 3.5 D in the various adsorbates. Capillary condensation appears to set in after the formation of an adsorbed monomolecular film.

Isosteric heats of adsorption for a given adsorbate depend upon the relative vapour pressures at which adsorption takes place and is almost independent of the nature of the adsorbent. The heat of adsorption decreases with increase in the relative pressure and tends to approach, but does not equal, the heat of liquefaction.

THE INFLUENCE OF CONTINUED feeding of curds and sulphaguandinine on the intestinal synthesis of thiamine has been studied at the Indian Institute of Science, Bangalore under a research scheme financed by the CSIR.

It has been shown that ingestion of curds brings about increased synthesis of thiamine and facilitates the growth of experimental animals receiving sub-optimal doses of thiamine. Sulphaguandinine inhibits the synthesis and consequently the growth of rats; the inhibiting effect, however, is greatly reduced when sulphaguandinine is administered along with curds.

THE PRODUCTION OF ANTIFUNGAL antibiotics by *Bacillus subtilis* is being investigated in the Univer-

sity College of Science & Technology, Calcutta, under a research scheme financed by the CSIR (CSIR News, Vol. 7, No. 3, p. 2).

A nutrient broth containing casein hydrolyzate, beef extract and dextrose gives the best yield of antibiotic; glucose enhances the antibiotic potency of the broth. A few amino acids, *e.g.*, glutamic acid, threonine, alanine, valine and leucine, present in the broth are utilized during the phase of rapid antibiotic production. This observation suggests that these amino acids are involved in the biosynthesis. It has been further observed that these amino acids, together with lysine and tyrosine, accumulate in the free state within the bacterial cells during cellular growth and disappear during antibiotic production, thus indicating their possible role as antibiotic precursors.

Intravenous injection of purified antibiotic (2 mg.) into mice (*av.* body weight, 20 g.) does not produce any toxic effects.

THE VARIATION OF SURFACE ENERGY with time of monolayer films of oleic acid on reaction with bromine water has been investigated in the laboratories of the Presidency College, Calcutta, under a research scheme financed by the CSIR. A hydrophil balance and a surface pressure balance (Adams type) constructed in the laboratory were employed in these studies. It has been shown that the surface energy decreases with time, the rates of such reactions can be measured from surface pressure data. The results conform to the values obtained in Langmuir Adam's experiments.

THE CENTRAL FUEL RESEARCH Institute has recently issued reports of (1) the Regional Coal Survey Station, Raniganj and (2) the Regional Coal Survey Station, Bilaspur for the periods April-Dec. 1956 and March-Dec. 1956 respectively.

(1) *Raniganj Coal Survey*—Physical and chemical survey of the Chanch-Begunia seam (thickness, 10 ft.) in the Chanch-Ramnagar area has been completed. The seam is of relatively good quality and a potential source of high volatile coking coal, when carbonized in blends with finely ground coke breeze or low-temperature chars of non- or feebly-caking coals.

A rapid survey of the Ramnagar and Laikdih seams which underlie the Chanch-Begunia seam has also been carried out. It has been shown that coal of metallurgical grade can be obtained by washing the coals (size ranges, 3 in.—1 in.; 3 in.—½ in.; and 3 in.—1/8 in.) in a heavy medium separator; smaller sizes (1 in.—0 in.) may be washed in a jig or cyclone washer. The effect of storage on the properties of coal has also been studied.

(2) *Bilaspur Coal Survey*—Two main horizons may be distinguished in the Korba coalfields, east of Hasdeo rivers. A 5 ft. thick seam (Lower Ghordewa) in the lower horizon contains coal of excellent quality. The upper horizon contains a 84 ft. thick seam (Jatraj seam) of inferior coal; more seams occur below the Jatraj seam.

The survey of Kurasia coal field revealed that the area near Ghorghela nala (3 miles from Kurasia colliery) is sufficiently promising. A sample from this area has been analysed; it contains 15 per cent ash and has a calorific value of 12,150 B.t.u./lb. (dry basis).

Full scale washability tests have been carried out on a run of mine sample (4 in.—0 in.) from the Jhagrakhand colliery. The size fraction 4 in.—2 in. contains 17.3 per cent ash (2 per cent lower than the overall sample).

SHRI KANTIPADA CHATTERJEE has been awarded a CSIR Senior Fellowship for research under the scheme, *Carbohydrate metabolism as affected by administration of drugs*, in progress at the Presidency College, Calcutta.

RESEARCH PAPER

S. C. Roy—Synthesis of vitamin B₁₂ and B₁₂-like compound by *Streptomyces olivaceus*. Arch. Biochem. Biophys., 64 (1956), 67.

The effect of *o*-phenylenediamine on the synthesis of compounds with vitamin B₁₂ activity by *S. olivaceus* has been reported. The incorporation of *o*-phenylenediamine or benzimidazole into the synthetic medium caused the formation of a slow moving analogue of vitamin B₁₂ which has been characterized by its chromatographic behaviour and inhibition analysis. The biosynthetic formation of vitamin B₁₂ and a new analogue has been discussed.

National Laboratories

National Chemical Laboratory, Poona

Effect of Gamma Radiations on Rubber

Solutions of crepe rubber in carbon tetrachloride, tetrahydrofuran, benzene and ethylene dichloride were exposed to the radiations from a 100 Mc. Ra-Be source. Changes in colour, viscosity and infra-red absorption spectra, which occurred only in carbon tetrachloride solutions, have been followed. Cyclization has been observed in the final irradiated product which resembled that obtained by the heat treatment of rubber with sulphuric acid.

Estimation of Molybdenum

The sodium salt of 1,2-dihydroxybenzene 3, 5-di-sulphuric acid (Tiron) has been employed for the colorimetric estimation of molybdenum. It produces a soluble, orange-coloured complex with soluble molybdenum salts, especially molybdates. The appearance of the colour is immediate and the intensity of colour does not decrease on long standing. One part of molybdenum can be easily detected in 1,000,000 parts of the solution. The presence of titanium and uranium markedly interferes with the colour.

National Metallurgical Laboratory, Jamshedpur

Moulding Characteristics of Jubbulpore Sand

The moulding characteristics of a sand sample from Jubbulpore have been studied. The sample is suitable for dry sand moulding for steel castings, particularly for medium and heavy jobs.

Central Food Technological Research Institute, Mysore

Parboiling of Rice

An improved method of parboiling, which reduces the soaking time and eliminates fermentation and odour, has been worked out. The method consists in soaking paddy in hot water at 70-75°C. for about 3 hr.; after discharging the soak water, the paddy is steamed (in the soaking tank itself), uniform distribution of steam being ensured by the use of a steam distributor. The treatment is economical and its feasibility has been demonstrated in commercial rice mills.

Processing of Turmeric

Treatment of turmeric emulsion with hydrochloric acid and sodium sulphite or bisulphite gives a bright yellow shade, comparable to that of lead chromate. The material so treated can be employed for imparting a bright yellow colour to turmeric.

The use of lead chromate for colouring turmeric has been banned, in view of the toxic effect of this chemical. The process developed in the Institute gives a product which is comparable to that obtained by the use of lead chromate. The process has been demonstrated to leading turmeric manufacturers in Erode (Madras State).

Central Road Research Institute, New Delhi

Pozzolana from Clays

Investigations carried out at the Institute have shown that pozzolanas of excellent quality can be manufactured, at a fraction of the cost of cement, by burning many types of clays (surkhi), abundantly available in India, at specific temperatures. Pozzolanas can be employed in partial replacement of cement (up to 25 per cent) in concrete mixes. Besides the saving in cement, they impart to the concrete many superior qualities, such as resistance against corrosive water, deleterious stone aggregates and salts in soil. Studies on pozzolanic reactions have revealed totally new aspects of fundamental importance.

Central Electrochemical Research Institute, Karaikudi

Electrolytic Copper Powder

The conditions for electro-depositing copper in fine powder form have been worked out. An acid bath containing copper sulphate and sulphuric acid is employed; the powder is deposited on a copper plate cathode, the anode being copper or antimonial lead. Electrolytic copper powder (—300 mesh) of high purity is used in the manufacture of antifouling paints.

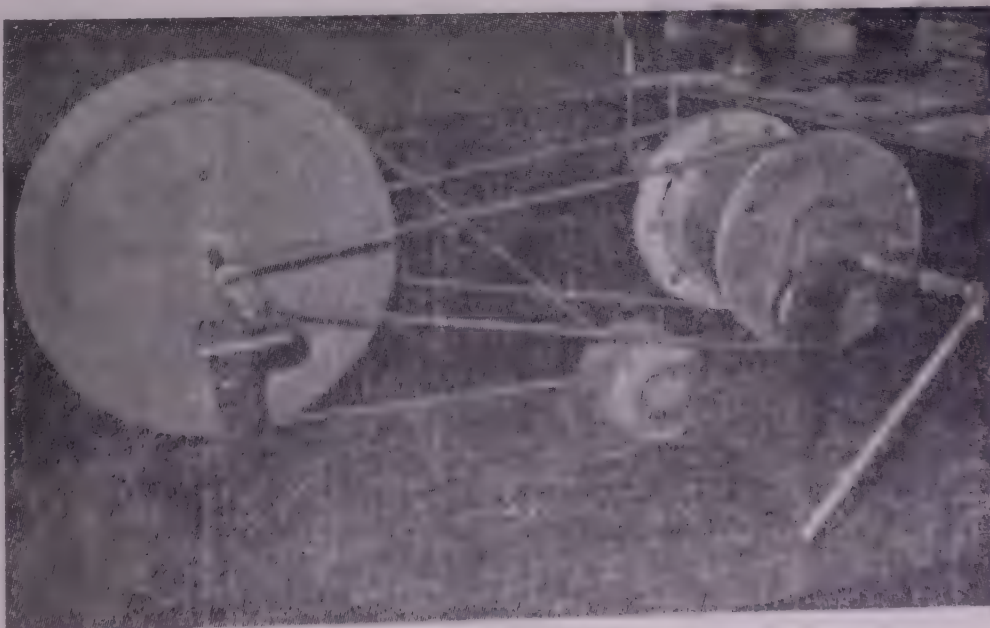
Samples of copper powder produced in the Institute have been sent to the Naval Chemical & Metallurgical Laboratory for tests.

Regional Research Laboratory, Hyderabad

Production of Calcium Gluconate

For obtaining data for the design of an industrial plant for the manufacture of calcium gluconate, the process has been worked on a semi-pilot scale. Two stainless steel fermenters (capacity, 12 litre), one rotary drum type and another vat type, have been constructed with arrangements for aeration, agitation, etc.

Active conversion of glucose to gluconate is achieved in the fermenters (with 10 per cent by volume of germinated inoculum) after a lag period of 5-6 hr. Single batch fermentation (initial glucose 15 per cent w/v; calcium carbonate, 85 per cent of theoretical quantity) is completed in 20 to 24 hr. In semi-continuous fermentations, subsequent batches (10 per cent glucose w/v) are oxidised without



RRL, HYDERABAD — Rotary drum fermenter for the production of calcium gluconate, designed and fabricated in the Laboratory

any lag period and very good yields of calcium gluconate (90 to 95 per cent) are obtained.

Indian Institute of Biochemistry & Experimental Medicine, Calcutta

Serological Test for Leprosy

Preliminary investigations have shown that the haemagglutination reaction between sheep's blood corpuscles sensitized by tuberculin and sera of leprosy patients give a positive antibody titre.

Mantoux tests have been carried out on lepromatous patients along with the haemagglutination reaction. No correlation has been found between the haemagglutination reaction and skin sensitivity to tuberculin in leprosy. The possibility of tubercular infection interfering with the haemagglutination reaction is thus ruled out.

Statistical analysis of test results with 132 patients using both serological and standard (Ziehl-Neelsen technique) methods has established that the serological test is more efficient than the standard method for the diagnosis of leprosy.

Central Salt Research Institute, Bhavnagar

Estimation of Potassium

A gravimetric method for the estimation of micro quantities of potassium in the form of calcium, sodium, magnesium, and nitrate ion, has been evolved. Hexanitrodiphenylamine is used as the reagent. The limits of concentrations of different ions, which will not effect the accuracy of potassium estimation, have been determined.

Burkite from Liquid Bitterns

Conditions for the separation of burkite ($\text{Na}_2\text{CO}_3 \cdot 2\text{Na}_2\text{SO}_4$) from Sambhar liquid bitterns of 29° Be (containing 25.6 g. of sodium chloride, 7.8 g. of sodium sulphate and 4.0 g. of sodium carbonate per 100 cc.) have been worked out. Studies are in progress for improving the yields of burkite and for the separation of its constituents.

Salt from Sambhar Solid Bitterns

Extraction of Sambhar solid bitterns, first with the mother liquor of chilled concentrates (from which sodium sulphate has been recovered), followed by saturated brine solution, results in the removal of most of the sulphate and carbonate. The residual solid is 98 per cent sodium chloride.

ADVERTISEMENTS

Applications are invited for the undermentioned posts. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Requests for forms must specify details of the post.

The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well qualified candidates. Minimum qualifications may be relaxed at the discretion of the Council in case of candidates otherwise found suitable.

Application forms duly filled in and accompanied by crossed Indian postal order for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

Last date for the receipt of applications, **Sept. 17, 1957.**

NATIONAL CHEMICAL LABORATORY, POONA

Assistant Director (Biochemistry): Scale of pay, Rs. 1,000—50—1,200—100—1,500.

QUALIFICATIONS: High academic qualifications and ability to direct research in biochemistry and its application to industry. A doctorate in biochemistry and original contributions to biochemical problems related to microbial metabolism, fermentation and enzyme or protein chemistry are essential.

NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR

1. Senior Scientific Officer Grade I (Low Shaft Furnace Project): Scale of pay, Rs. 600—40—1,000—50/2—1,150.

QUALIFICATIONS: Degree in metallurgy with experience in iron and steel plant, research and development including blast furnace iron production. Practical experience in general metallurgical technique essential. Knowledge of fuel technology as applied to ferrous metallurgy desirable.

2. Electrical Engineer (2 posts): Scale of pay, Rs. 300—25—600.

QUALIFICATIONS: Degree in electrical engineering and practical experience in the maintenance of electrical installations.

3. Senior Scientific Assistant (Physical Metallurgy): Scale of pay, Rs. 250—25—500.

QUALIFICATIONS: Degree in metallurgy or equivalent or M.Sc. degree

in physics, with some research experience.

CENTRAL FUEL RESEARCH INSTITUTE, JEALGORA

Statistical Officer: Scale of pay, Rs. 350—30/2—410—30—590—EB—30—770—40—850.

QUALIFICATIONS: Master's degree in statistics with adequate knowledge of techniques of sampling and application of statistical methods to research problems, preferably in fuels. A basic degree in physics, chemistry and/or mathematics desirable.

CENTRAL LEATHER RESEARCH INSTITUTE, MADRAS

Junior Scientific Officer (2 posts): Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS: For one Post—B.Sc. (Tech.) in leather technology or M.Sc. in organic chemistry with adequate research experience in the field of natural and synthetic polymers. B.Sc.'s in other science subjects with recognised diploma or certificate in leather technology may also apply. Research experience in the application of polymers in leather manufacture with record of published papers desirable. For other Post—B.Sc. (Tech.) in leather technology or related science subject with recognised diploma or certificate in leather technology. Journalistic experience, capability for holding independent charge of editing and publishing technical journals, circulars, bulletins, etc. Ability to write technical article in simple English and in Indian languages desirable.

CENTRAL SALT RESEARCH INSTITUTE, BHAVNAGAR

Senior Scientific Officer Grade II: Scale of pay, Rs. 350—30/2—410—30—590—EB—30—770—40—850.

QUALIFICATIONS: Ph.D. degree in inorganic or physical chemistry with 5 years' research experience and well versed in the use of modern instrumental technique.

PROJECT: SAMBHAR LAKE BITTERNS, JAIPUR

1. Senior Scientific Officer Grade I: Scale of pay, Rs. 600—40—1,000—50/2—1,150.

2. Junior Scientific Officer: Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS (For Posts 1 & 2): High academic qualifications in physical or inorganic chemistry or chemical engineering with adequate experience in industrial production, pilot plant work or research development, preferably in a salt or alkali works.

NEW DELHI - SEPT. 14, 1957 ● BHADRA 23, 1879

Meetings

The next meeting of the Board of Scientific & Industrial Research will be held in Room No. 9, Parliament House, New Delhi on Sept. 23, 1957 at 5.0 p.m.

The next meeting of the Governing Body of the CSIR will be held in Room No. 9, Parliament House, New Delhi on Sept. 24, 1957 at 10.0 a.m.

A joint meeting of the Scientific and Engineering Sub-Committees of the Board of Scientific & Industrial Research will be held in the Conference Room of the CSIR Secretariat, New Delhi on Sept. 22, 1957 at 10.0 a.m.

Symposium

The symposium on the Utilization of Indian Medicinal Plants, organized by the Pharmaceuticals and Drugs Research Committee, will be inaugurated by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, at the Central Drug Research Institute, Lucknow on Oct. 12, 1957 at 11.0 a.m.

Personal

* DR. J. L. SARIN, Industrial Liaison Officer, CSIR, is assisting the Director-General, Scientific & Industrial Research in technical work as Assistant Director-General, in addition to his present duties, with effect from June 17, 1957.

* DR. N. L. LAHIRY has been appointed Assistant Director (Process Development), CFTRI, Mysore, with effect from July 17, 1957.

* SHRI P. P. BHATNAGAR, Senior Scientific Officer, NML, Jamshedpur, has been appointed Assistant Director (Extractive Metallurgy), with effect from Aug. 27, 1957.

* SHRI H. V. BHASKAR RAO, Senior Scientific Officer, NML, Jamshedpur, has been appointed Senior Scientific Officer Grade I (Refractories), with effect from Aug. 27, 1957.

* SHRI R. M. KRISHNAN, Senior Scientific Officer, NML, Jamshedpur, has been appointed Senior Scientific Officer Grade I (Liaison & Information), with effect from Aug. 30, 1957.

* SHRI S. B. DESHAPRABHU assumed charge as Production Officer, CSIR Publications Directorate, New Delhi on Aug. 31, 1957.

* SHRI GURCHARAN SINGH KONDAL has been appointed Civil Engineer, CBRI, Roorkee, with effect from May 24, 1957.

* SHRI S. K. DAS GUPTA, Senior Scientific Officer, CFRI, Jealgora, has been appointed Combustion Engineer on promotion.

* SHRI P. N. MUKHERJEE, Junior Scientific Officer, CFRI, Jealgora, has been appointed Senior Scientific Officer Grade II on promotion.

* SHRI B. K. MAZUMDAR, Junior Scientific Officer, CFRI, Jealgora, been appointed Senior Scientific Officer Grade II on promotion.

* SHRI M. C. SEN has been appointed on promotion Senior Scientific Officer Grade II, NML, Jamshedpur, with effect from Aug. 27, 1957.

* SHRI G. P. MATHUR has been appointed on promotion Senior Scientific Officer Grade II, NML, Jamshedpur, with effect from Aug. 29, 1957.

* SHRI RAMESHWAR CHOUBEY has been appointed on promotion Junior Scientific Officer, NML, Jamshedpur, with effect from Aug. 3, 1957.

* SHRI MANJIT SINGH CHOPRA has been appointed Junior Scientific Officer, NML, Jamshedpur, with effect from Aug. 8, 1957.

* DR. B. MUKERJI, Director, CDRI, Lucknow, has been appointed member, Board of Directors of the Hindusthan Insecticides Ltd., Delhi.

* DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore, has been nominated member of the Committee to be set up by the Union Ministry of Commerce & Industry for reviewing the development of the Milk Powder Industry in India.

* DR. A. N. KAPPANNA, Assistant Director-in-charge, CSRI, Bhavnagar, has been nominated as CSIR representative on the Alkalis and Chlorine Sectional Committee of the Indian Standards Institution. Dr. D. J. Mehta, Senior Scientific Officer, has been nominated alternate representative.

* SHRI S. K. MAJUMDER, Junior Scientific Officer, CFTRI, Mysore, has been elected a Fellow of the Royal Entomological Society.

CSIR PATENTS

(APPLICATIONS FILED)

60828: Manufacture of artificial porcelain teeth—Atma Ram, N. V. Raghunath & S. K. Chakravarty, CGCRI, Calcutta.

A process for the manufacture of artificial porcelain teeth largely from indigenous raw materials available in India.

60864: Improvements relating to the electrolytic preparation of salicylaldehyde—H. V. Udupa & B. B. Dey, CECRI, Karaikudi.

The invention relates to further improvements made in the process described in Indian Patent No. 52631. A material yield of 65-70 per cent of salicylaldehyde is obtained at a current efficiency of 50-55 per cent and the process is rendered more economical by enabling some of the raw materials to be reused.

60865: Improvements in and relating to the electrolytic reduction of m-dinitrobenzene to 2:4-diaminophenol—G. S. Subramanian, H. V. Udupa & B. B. Dey, CECRI, Karaikudi.

The invention aims at improving the yield of 2:4-diaminophenol obtained by the electrolytic reduction of m-dinitrobenzene. The improvements made in the process not only give a higher yield of aminophenol but also considerably reduce the time of electrolysis by enabling the use of high current densities.

BRIEFS

HYDROUS OXIDES OF RARER METALS of Groups III and IV of the Periodic Table, their precipitation, adsorptive power, ability to form compounds and catalytic activity are under study at the University of Allahabad under a research scheme financed by the CSIR.

The conditions for the precipitation of hydrous thorium oxide from thorium chloride solution have been studied. It has been found that thorium was quantitatively precipitated from solution when nearly three equivalents of alkali was added; in dilute solutions, the precipitation value approached the theoretical alkali equivalent value, namely, four equivalents. The adsorption of various ions present in the system during precipitation has been quantitatively investigated. It has been shown that thorium hydroxide precipitated by deficient amounts of alkali shows a basic character; that precipitated by an excess of alkali, possesses acid characteristics. It is pointed out that the observed amphoteric nature may be of value in the use of the hydroxide as a catalyst. The hydroxide may also find application in chromatography as an adsorbent.

Incidentally, a colorimetric method for the estimation of micro-quantities of thorium, using ammonium aurintricarboxylate as reagent, has been worked out. The composition, stability and structure of the coloured chelate has been investigated and the free energy of formation evaluated.

THE PROCEEDINGS OF THE SYMPOSIUM on *Industrial Failure of Engineering Metals & Alloys* held under the auspices of the National Metallurgical Laboratory in February 1953 have been published.

The 347-page (size, 10½ in. x 8 in.) publication contains 29 technical papers relating to the service failure of steel parts, iron rolls, rails and railway materials and engineering metal components; failures in aircraft and aero engines; failure of metals in sulphur and sulphur bearing media; failure due to corrosion; failure at elevated temperatures; failure due to liquid or brittle phase; fatigue stress of materials; stress concentrations; stress raisers and stress analysis; residual stress; corrosion and corrective measures;

corrosion in boilers and water circulation systems; flow and fracture of metals; formation of flakes in steel; and material of construction for heat engines in high temperature service.

'RAPID TANNAGE OF SOLE LEATHER' is the subject dealt with in a bulletin issued by the Central Leather Research Institute, Madras (Bull. No. 5, 36 pp., Price Re. 1). The publication describes eight tanning processes developed at the Institute for the rapid tannage of sole leather. Tanning by the processes described takes 3-4 weeks as compared to 3-4 months taken by the conventional pit-tannage process. The quality and cost of production are comparable to those of leathers produced by the traditional process. The processes can be adopted by tanneries which are not equipped with power or any special machinery; they are also suitable for adoption by cottage bag tanners.

Copies of the publication are available from the Assistant Director-in-charge, CLRI, Madras-20.

GLAZED KID IS A LIGHT FINE LEATHER made from goat skins by chrome tanning. The leather is used for shoe uppers of superior quality and for fancy goods. About 80 per cent of goat skin produced in India is now exported due to the lack of the 'know-how' of glazed kid manufacture. A recent bulletin entitled "Processes for the manufacture of glazed kid", published by the Central Leather Research Institute, Madras (No. 2, 80 pp., Price Re. 1) gives the results of investigations carried out on the manufacture of glazed kid. The publication describes in detail seven adaptive (American, British and German) and four original processes for producing glazed kid leathers.

Standard recipes for dyeing and finishing, and lay-outs and plans for glazed kid tanneries are described in the bulletin.

THE FOLLOWING NEW SCHEMES have been sanctioned with effect from Sept. 3, 1957.

1. *Biosynthesis of coenzyme nucleotides and oligosaccharides and other plant carbohydrates*—Dr. K. V. Giri, Indian Institute of Science, Bangalore.

2. *Studies in the metabolism of trace elements and phosphoproteins*—Dr. P. S. Sarma, University of Madras, Madras.

SHRI C. D. DHARIYAL HAS BEEN awarded a CSIR Senior Fellowship for research under the scheme, *Manufacture of cellulose ethers, particularly carboxy methyl cellulose, hydroxy ethyl cellulose and ethyl cellulose*, in progress at the Presidency College, Calcutta.

PROF. M. S. THACKER, DIRECTOR-General, Scientific & Industrial Research, inaugurated the *Regional Research Laboratory Club* at Hyderabad on Aug. 24, 1957.

RESEARCH PAPERS

MUKHERJEE, S., ACHAYA, K. T., DEUEL, H. J. & ALFIN SLATER, R. B.—The nature of the lipids in rat blood. *J. biol. Chem.*, 226 (1957), 845.

The paper describes the chromatographic separation of rat blood lipids into fat components and examination of the fractions for component fatty acids by iodimetry and spectrophotometry following alkali-isomerisation.

CHAKRAVARTY, R. N. & MITRA, M. N.—Simplified procedure for the preparation of Girard's Reagent T. *J. Instn Chem. (India)*, 29 (1957), 158-60.

The paper describes a simplified procedure for the preparation of Girard's Reagent T. The procedure avoids the difficulty in handling trimethylamine without affecting the yield. The paper also describes an improved method of preparing ethyl chloroacetate, the starting material.

SINHA, P. K. & MULLICK, K. L.—Mercaptan as a chain transfer agent in emulsion polymerisation of styrene. *J. Indian chem. Soc.*, 34 (1957), 424.

The chain transfer mechanism of mercaptan in emulsion polymerisation of butadiene and styrene takes place at temperature below 50°C. The chain transfer constant of *n*-octyl mercaptan in emulsion polymerisation of styrene at 5°C. with potassium persulphate as the initiator has been found to be 23, a value in agreement with that obtained in systems with redox initiator. The rate of polymerisation of styrene is also in fair agreement with the values calculated on the basis of Smith-Ewart theory of emulsion polymerisation.

National Laboratories

National Metallurgical Laboratory, Jamshedpur Dense Carbon Aggregate

Carbon aggregate of high density (bulk density, above 1.5; ash, below 6.7 per cent) forms the basic raw material for Soderberg electrode paste and carbon refractories; they are of vital importance to the development of ferro-alloys and allied industries. In Europe and America, dense carbon aggregate is produced from low ash anthracite which is not available in India.

A process for the production of dense carbon aggregate from petroleum coke and bituminous coal has been evolved at the Laboratory. The process does not involve the use of any special equipment and yields dense grains up to 1 in. size with low porosity and high strength. Precalcination of raw materials is not required.

Up-grading of Manganese Ores

Low-grade manganese ore from Sambalpur, Orissa (assaying Mn, 38.53; Fe, 17.50; SiO_2 , 5.02; BaO, 4.03; and P, 0.25 per cent) crushed to size $\frac{1}{4}$ in. was reduced by coke oven gas. The product was then crushed to -35 mesh and subjected to wet magnetic separation. A non-magnetic fraction assaying Mn, 60.2 and Fe, 3.7 per cent, with a recovery of 51 per cent manganese, was obtained. A mixture of non-magnetic and magnetic products (excepting first fraction) gave a manganese concentrate assaying Mn, 57.9 and Fe, 6.1 per cent, with a recovery of 74.5 per cent manganese.

Central Fuel Research Institute, Jealgora

Domestic Coke

An inexpensive plant (capacity, 10 tons per day) for producing smokeless domestic coke from non-coking coals, briquettes and middlings has been set up at the Laboratory. The process involves controlled carbonization of coal on a moving bed in a coking chamber. The heat for carbonization is supplied by burning the volatile matter of coal, and burning is controlled by regulating the supply of air to the different zones of the coking compartment. The heat available from waste gases can be utilized for the generation of steam, burning of lime, making of bricks

and for firing cement kilns. The heat efficiency is high and the plant is capable of giving high outputs in continuous operation. The product which appears like charcoal is superior to the conventional soft coke produced by open-stack burning.

Central Food Technological Research Institute, Mysore

Acetic Acid and Mango Pickle

The relative effects of acetic, citric and lactic acids on the growth of moulds and yeasts in mango pickle has been investigated. It has been found that yeast growth lowers the acidity of pickles; that a much lower concentration of acetic acid effectively inhibits spoilage than lactic or citric acids; and that the effect of acetic acid is not a function of hydrogen ions but is greatly influenced by salts.

Central Drug Research Institute, Lucknow

Oral Contraceptives

Preliminary experiments on a new androgenic compound, 19-nortestosterone, indicate that it is of value as a oral contraceptive. Observations on rats suggest that oral administration for short periods, before or during mating, has little effect on pregnancy; prolonged treatment during mating, however, suppresses pregnancy.

Central Salt Research Institute, Bhavnagar

Glauber Salt from Sambhar Crust

Three procedures, based on the study of the system $\text{NaCl-Na}_2\text{SO}_4\text{-H}_2\text{O}$, have been developed for the separation of sodium sulphate from Sambhar crust (Na_2SO_4 content, 60 per cent). It has been observed that sodium sulphate can be recovered in an overall yield of 95 per cent by chilling a saturated solution of crust salts and adding sodium chloride to saturation.

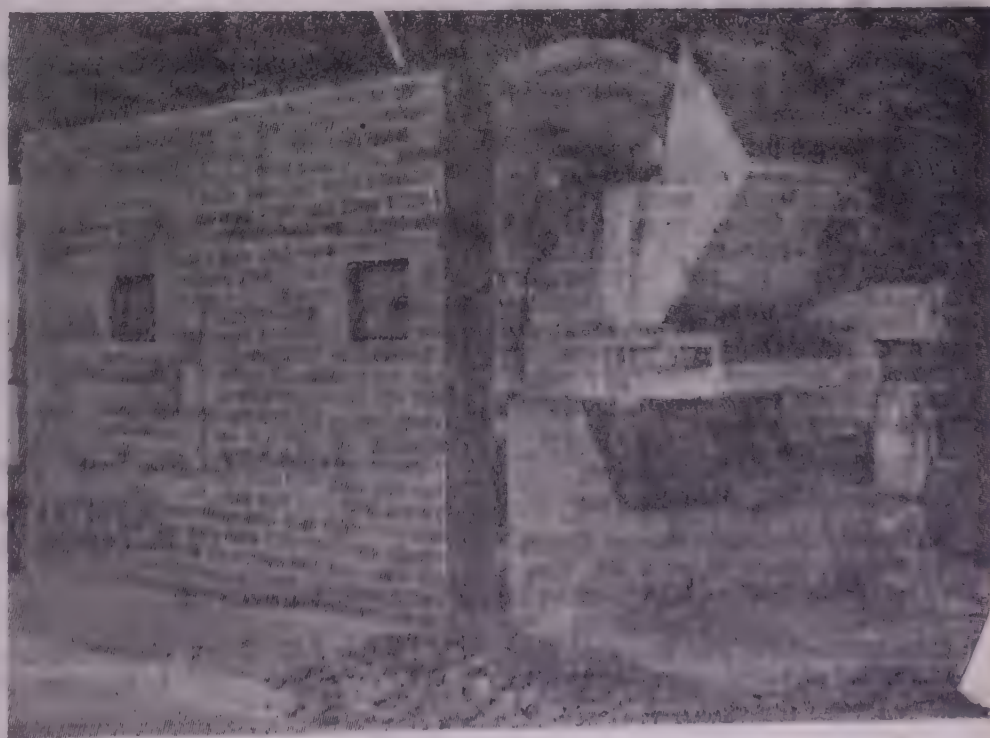
Thermal Decomposition of Sodium Sulphate

Studies on the thermal decomposition of sodium sulphate in mixture with bauxite and carbon have shown that about 70 per cent of the sulphate decomposes, yielding sulphur dioxide, in 2-3 hr. at $1,000^\circ\text{C}$. Small additions of calcium carbonate improve the yield of sulphur dioxide; the presence of ferric oxide lowers the yield while sodium chloride has no effect.

Regional Research Laboratory, Hyderabad

Oleic Acid from Tallow

Conditions have been worked out for the separation of high purity oleic and other saturated acids from tallow. The acids are extensively used in the manufacture of rubber, carbon paper, typewriter ribbon ink, cosmetics and toilet articles.



CFRI, JEALGORA—Pilot plant set up for the production of domestic coke

ADVERTISEMENT

Applications are invited for the undermentioned posts. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Requests for forms must specify details of the post.

The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well qualified and experienced candidates.

Application forms duly filled in and accompanied by crossed Indian postal order for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

Last date for the receipt of applications, **October 7, 1957.**

NATIONAL CHEMICAL LABORATORY, POONA

1. Senior Scientific Officers (3 posts): Scale of pay, Rs. 350—30/2—410—30—590—EB—30—770—40—850.

QUALIFICATIONS: For the first post—M.Sc. or Ph.D. in chemical engineering with experience in process development work or design of pilot plant. For the second post—Preferably Ph.D. in physics or physical chemistry and knowledge of quantum mechanics and statistical mechanics. Experience in crystal structure analysis or other aspects of solid-state physics is desirable. For the third post—Preferably Ph.D. in organic chemistry or chemical technology with special reference to natural or synthetic colouring matters.

2. Junior Scientific Officers (6 posts): Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS: For 2 posts—High academic qualification in chemical engineering with practical experience in industry or training in chemical engineering equipment design. For 1 post—Preferably Ph.D. in synthetic organic chemistry. For 3 posts—M.Sc. or Ph.D. in chemical technology or physical or organic or polymer chemistry with experience of research in polymer or rubber technology.

NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR

1. Senior Scientific Officers Grade II (3 posts): Scale of pay, Rs. 350—30/2—410—30—590—E.B.—30—770—40—850.

QUALIFICATIONS: For the first post—M.Sc. in physical chemistry with

research experience in electro-metallurgy and electroplating. For the second post—Graduate or diploma holder in metallurgy with experience in foundry technology. For the third post—High academic qualifications in chemical engineering and adequate practical experience in design and installation of pilot plant. Research experience in chemical technology desirable.

2. Junior Scientific Officers (5 posts): Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS: For the first post—Graduate in metallurgy or chemical engineering with experience in ore-dressing plant or laboratory. For the second post—Good academic qualifications in metallurgy or chemical engineering with practical experience in metal industries and ability to explain research results to industry. For the third post—M.Sc. in refractories or geology, or a science degree with qualifications in refractories. For the fourth post—Graduate in metallurgy with experience in iron and steel technology and research, or practical experience in general metallurgical techniques. For the fifth post—High academic qualifications in metallurgy or chemical engineering with sufficient experience in technical report writing and ability to explain research results to industry.

CENTRAL FUEL RESEARCH INSTITUTE, JEALGORA

Senior Scientific Officer (Distillation & Pyrolysis): Scale of pay, Rs. 350—30/2—410—30—590—EB—30—770—40—850.

QUALIFICATIONS: High academic qualifications in chemistry or chemical engineering preferably with research. Experience in distillation and cracking of coaltar and/or petroleum and in the design of plant is desired.

RESEARCH FELLOWSHIPS

SHRI RAM INSTITUTE FOR INDUSTRIAL RESEARCH, DELHI

(Scheme: Studies in the cross bonding reaction of cellulose).

1. Senior Research Fellow: Allowances, Rs. 400/- p.m. fixed.

QUALIFICATIONS: Preferable Ph.D. in one or more of the following subjects: (a) Organic Chemistry (b) Physical Chemistry (c) Polymer Chemistry (d) Cellulose Chemistry. Age, preferably below 27 years.

2. Junior Research Fellow: Allowances, Rs. 200/- p.m. fixed.

QUALIFICATIONS: Preferably 1st class M.Sc. with background in physical and organic chemistry. Age, preferably below 24.

The fellowships are tenable for a period of two years, continuance during the second year being subject to satisfactory report.

Application forms and conditions of fellowships are obtainable on payment of Re. 1.00 only in the form of a crossed Indian postal order payable to the Secretary, Council of Scientific and Industrial Research, Old Mill Road, New Delhi. Completed applications accompanied by a fee of Rs. 6.50 should reach the Secretary by **October 7, 1957.**

CENTRAL LEATHER RESEARCH INSTITUTE, MADRAS

Announcing the publication of :

1. SYMPOSIUM ON EAST INDIA TANNING INDUSTRY AND TANNING AGENTS

(Size: 9½"×6½", Pages: iv+308)
Price: Re 1 (postage extra)

2. BULLETIN No. 2—PROCESSES FOR THE MANUFACTURE OF GLAZED KID

by

B. M. DAS (LATE) AND J. C. DEB

(Size: 9½"×6½", Pages: 80)
Price: Re 1 (postage extra)

3. BULLETIN No. 5—RAPID TANNAGE OF SOLE LEATHER

(Size: 9½"×6½", Pages: 36)
Price: Re 1 (postage extra)

For copies write to:

The Assistant Director-in-charge, Central Leather Research Institute, Adyar, Madras—20.

Central Indian Medicinal Plants Organisation to be established

The Board of Scientific & Industrial Research and the Governing Body of the Council of Scientific & Industrial Research met on Sept. 23 and 24, 1957 respectively in New Delhi. The Prime Minister, president of the Council, presided.

The Governing Body decided that a Central Indian Medicinal Plants Organisation (CIMPO) for the development of medicinal plants industry in the country be established as soon as possible. An Executive Committee for the Organisation is to be constituted.

The establishment of a Public Health Engineering Research Institute for research on all phases of public health engineering was approved. Planning of the institute would be taken up by a project team which would also initiate and coordinate research work in the existing Centres.

Early establishment of: (i) A transonic/supersonic wind tunnel alongside the Hindustan Aircraft Ltd., Bangalore, to work in close coordination and collaboration with the Aeronautical Department of the Indian Institute of Science, Bangalore and (ii) Gas Turbine Research Centre at the Indian Institute of Science are the other recommendations of the Governing Body.

The setting up of the following pilot plants were approved:

1. Manufacture of large size electrodes and magnetic fluid — NPL, New Delhi.
2. Production of rayon pulp from indigenous raw materials and a viscose spinning unit — NCL, Poona.

The number of Research Committees has been reduced from

25 to 13 by amalgamating some of the existing Research Committees dealing with allied subjects. The following are the reconstituted Research Committees:

1. Civil Engineering and Hydraulics Research Committee
2. Electrical and Mechanical Engineering Research Committee
3. Physical Research Committee
4. Chemical Research Committee
5. Pharmaceuticals and Drugs Research Committee
6. Biological Research Committee
7. Radio Research Committee
8. Metals Research Committee
9. Aeronautical Research Committee
10. Public Health Engineering Research Committee
11. Vanaspathi Research Advisory Committee
12. Mining Research Committee
13. Joint Committee of the CSIR and Indian Central Oilseeds Committee for Vegetable Oils Research

Thirty-one research projects, covering various branches of science, technology and engineering have been sanctioned (see p. 4).

The following symposia have been approved for being held during the year:

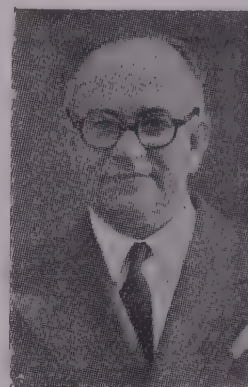
1. Biosynthetic and metabolic aspects of vitamins — Chemical Research Committee.

2. Ocean waves, tides and surges and microseisms — Radio Research Committee.
3. Water purification and stream pollution by industrial wastes — Public Health Engineering Research Committee.

Personal

* PROF. M. S. THACKER, Secretary, Department of Scientific Research & Technical Education, Ministry of Education and Scientific Research has, in addition, been designated as Educational Adviser (Technical) to the Government of India.

Prof. Thacker will preside over the Forty-fifth Annual Session



of the Indian Science Congress to be held in Madras from January 4 to 10, 1958. Prof. Thacker recently attended the Annual Meeting of the British Association for the Advancement of Science (Sept. 4-8) at Dublin, as representative of the Indian Science Congress Association.

* PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been appointed member of the Standing Committee of the National Development Council, Union Ministry of Commerce and Industry.

* PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been elected an honorary member of the Institution of Surveyors (India).

* DR. J. W. WHITAKER, Special Officer, CSIR Secretariat, has been designated Deputy Director-General, Scientific & Industrial Research with effect from Sept. 24, 1957.

* SHRI V. S. SAMPATH has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from Aug. 8, 1957.

* SHRI R. D. GUPTA has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from Aug. 8, 1957.

BRIEFS

STUDIES ON THE PREPARATION OF steroid hormones from diosgenin are in progress at the School of Tropical Medicine, Calcutta, under a research scheme financed by the CSIR.

An economic and simple method for the isolation of diosgenin from *Dioscorea parazeri* and *D. deltoidea* has been worked out and patented.

A novel method for the preparation of pseudo-diosgenin—an intermediate for the preparation of progesterone—from diosgenin has also been developed. It consists in heating under reflux a mixture of diosgenin and acetic anhydride in the presence of triacetin as solvent. The new method has the following advantages over the usual procedure: (i) The quantity of acetic acid required is reduced; (ii) triacetin is miscible with water and hence the product can be easily recovered as acetate by dilution with water; (iii) the temperature of reaction can be raised to 192°C.; (iv) no closed system is necessary for carrying out the conversion, and handling is easier; and (v) the method is suitable for the preparation of other pseudo-sapogenins.

STUDIES ON ADRENAL CORTICAL activity and vitamin C nutrition in relation to diabetes are in progress at the Presidency College, Calcutta, under a research scheme financed by the CSIR (*CSIR News*, Vol. 7, No. 2, p. 2).

Tissues of scorbutic and normal guinea pigs were examined for their glucose tolerance and for glycogen, ascorbic acid, dehydroascorbic acid and glutathione contents. Glucose tolerance diminished in scorbutic guinea pigs; the tolerance was improved by administering insulin. The glycogen content of liver and skeletal muscle diminished in scorbutic animals; the glycogen concentrate was strikingly improved by the administration of insulin.

The glutathione content of blood, adrenals, intestine, pancreas and spleen was low in scorbutic animals; treatment with insulin increased the glutathione content of intestine, pancreas and spleen, but it had no effect on the glutathione content of blood and adrenals.

The ascorbic acid content of scorbutic tissues was poor; it was unaffected by treatment with insulin. The concentration of dehydroascorbic acid (found only in scorbutic tissues) was also unaffected by insulin treatment.

PILOT OVEN TESTS, CARRIED OUT under the auspices of the Coal Blending and Coking Research Sub-Committee, to ascertain the possibility of using blends of coals from Argada Top seam (South Karanpura Coalfield) and Badjna and Sanctoria seams (Raniganj Coalfield) with Tatas' coke ovens coal mixture, indicated that hard coke (according to Breslau index) could be prepared from them.

Blends containing 20-25 per cent of Argada Top seam coal (ash, 19.18; volatile matter, 33.70 per cent) and Tatas' coke ovens coal mixture (grain size, 80 per cent through $\frac{1}{8}$ in.) produced medium hard coke; hard coke could be obtained when the blend was crushed to pass 100 per cent through $\frac{1}{8}$ in. Blends containing 15-20 per cent of Badjna seam coal (ash, 21.0; volatile matter, 23.28 per cent) and Tatas' coke ovens coal mixture (grain size, 100 per cent through $\frac{1}{8}$ in.) produced hard coke. Full scale oven test carried out with the blend containing 40 per cent Sanctoria seam coal (ash, 13.00; volatile matter, 35.40 per cent) and 60 per cent Tatas' coke oven coal mixture gave encouraging results. Full scale oven test with blend containing 60 per cent of Sanctoria seam coal and 40 per cent Jogta 11 seam coal produced soft coke (ash, 24.88 per cent).

THE FOLLOWING HAVE BEEN awarded CSIR Junior Fellowships for research under the schemes noted against their names:

1. SHRI M. S. MURTY—*Fractionation of fatty material by Clathrate compounds* (Laxminarayanan Institute of Technology, Nagpur University, Nagpur).

2. SHRI SUKUMAR DAS—*Studies on the essential oil of Canarium resin* (Calcutta University, Calcutta).

3. SHRI KRISHNA KUMAR TEWARI—*Biological role of metaphosphate in micro-organisms* (Lucknow University, Lucknow).

4. KUMARI D. D. VAGHANI—*Synthesis of folic acid derivatives* (Institute of Science, Bombay).

RESEARCH PAPERS

ANALYSIS OF FADING RECORDS FROM FOUR SPACED RECEIVERS FROM IONOSPHERIC WIND MEASUREMENTS—M. Srirama Rao & B. Ramachandra Rao, Andhra University, Waltair. *J. atmos. terr. Phys.*, 10 (1957), 307-17.

The paper deals with the analysis of fading records from four spaced receivers of pulsed radio waves reflected at vertical incidence from the ionosphere, with a view to finding out the shape of lines of maxima and evolve a better method of calculating wind data. The usual three-station method of measurement of ionospheric winds using average displacements is found to give inaccurate results. It is shown that the method of calculating wind data using median values of displacements gives reliable results. A new and improved method of analysing wind records for evaluation of true velocities and direction is also presented.

A METHOD FOR DETERMINATION OF CARBONATE-CO₂ IN COAL—M. S. Bawa, B. R. K. Coal Survey Station, CFRI, Jealgora. *J. Instn Chem. (India)*, 29 (1957), 201-203.

A single determination of carbonate-CO₂ in coal takes several hours to complete. In this paper, a simple gravimetric method which gives results of high accuracy and takes about 20 minutes for one single determination is described. The method was tested with pure iceland-spar (99.7 per cent) and with sample of coal containing carbon dioxide in the range of 0.1 to 2.7 per cent.

A VOLUMETRIC METHOD FOR THE DETERMINATION OF SULPHUR IN COAL—S. K. Majumdar & N. G. Banerjee, CFRI, Jealgora. *J. Instn Chem. (India)*, 29 (1957), 213-15.

The usual gravimetric method for the determination of sulphur in coal by Eschka process is time consuming. The paper suggests a volumetric method in which the precipitate, BaSO₄, is dissolved in an excess of a standard ammonical solution of disodium dihydrogen ethylenediamine tetracetate (versenate) and the excess of versenate is titrated against standard magnesium chloride solution using solochrome black as indicator.

National Laboratories

National Chemical Laboratory, Poona

N-P Fertilizer from Singhbhum Rock

Weathered apatite containing iron oxide, occurring in workable deposits in Singhbhum (estimated at 5,00,000 tons), is unsuitable for use as a raw material for superphosphate manufacture.

A process for converting the ferruginous apatite into iron-free, water-soluble fertilizer, containing approximately 16 per cent nitrogen and 25 per cent phosphorus has been worked out in the Laboratory. The process utilizes ammonium sulphate produced from gypsum; direct use of sulphuric acid is avoided.

Preparation of Arginine

A comparative study has been made of some of the well known methods for the isolation of arginine via flavianate. By determining the losses of arginine at various steps and the conditions under which these losses occur, a method has been worked out by which arginine is obtained as the pure hydrochloride with an average yield of 88 per cent.

Separation of Zirconium and Hafnium

Optimum conditions for the differential elution of hafnium and zirconium, adsorbed on Amberlite IRA 400 anion exchange resin have been determined. The data obtained have been utilized for preparing spectroscopically pure hafnium and zirconium oxides.

National Metallurgical Laboratory, Jamshedpur

Up-grading of Manganese Ore

A low-grade ferruginous ore (assaying Mn, 27.2; Fe, 24.2; SiO_2 , 7.53; Al_2O_3 , 7.43; and P, 0.09 per cent) has been up-graded to yield a concentrate suitable for making ferromanganese.

Reduction of ore (size, $\frac{1}{2}$ in.) in a rotary kiln at $580^\circ\text{--}600^\circ\text{C}$. followed by wet magnetic separation at —10 mesh, gave a non-magnetic manganese concentrate assaying



NML, JAMSHEDPUR — Reduction furnace designed and fabricated for up-grading of manganese ores

Mn, 55.3; Fe, 4.5; SiO_2 , 5.0; Al_2O_3 , 4.7; and P, 0.097 per cent, with a recovery of 55 per cent Mn. Mixing the magnetic product (assaying Mn, 17.3; Fe, 42.2; SiO_2 , 6.6; Al_2O_3 , 7.4; and P, 0.11 per cent) with the non-magnetic product gave a manganese concentrate containing: Mn, 52.8 and Fe, 8.5 per cent with a recovery of 62.6 per cent Mn.

Central Food Technological Research Institute, Mysore

Browning in Fruit Products

Investigations in progress at the Institute show that the intensity of browning in preserved products is minimum when sulphur dioxide is used as preventive; addition of sodium benzoate or pasteurisation are not so effective; addition of citric acid, lime juice, sugar or ascorbic acid enhanced browning; Sathgudi orange juice is more prone to browning than Coorg orange juice, probably due to the higher sugar content in the former. Browning of amla and jack fruit squashes was more marked than of musk melon and papaya squashes.

Trypsin Inhibitor in Jack Fruit Seed

The effect of the method of extraction and cooking on the acti-

vity of trypsin inhibitor present in jack fruit (*Artocarpus integrifolia*) seed has been investigated. Extraction with phosphate buffer or dilute hydrochloric acid is conducive to the retention of the activity of the inhibitor. The activity is destroyed by autoclaving the extract for about 30 min. and also by boiling the seeds in water or saline solution or by baking.

Central Building Research Institute, Roorkee

Bricks from Black Cotton Soil

An improved process of making bricks from black cotton soil has been developed. In this process, a part of the clay used for brick making is pre-calcined and mixed with raw clay. The addition of calcined clay improves workability and reduces drying and firing cracks. The bricks produced are denser and stronger than those made by the usual process of mixing coal ash.

Central Road Research Institute, New Delhi

Design of Cycle Tracks

A study of the design of cycle tracks in urban areas has been undertaken. It has been found that design standards for cycle tracks worked out in Western Countries need to be amended to suit traffic, economic and climatic conditions in India. The study indicates that a 3 per cent grade cycle traffic should not be longer than 765 ft. and a 5 per cent grade, should not be more than 70 ft. in length.

Regional Research Laboratory, Hyderabad

Rehydration of Metakaolin

Dehydrated kaolin, metakaolin as it is called, does not recombine with water at ordinary pressures and temperatures. This is because of structural changes which accompany dehydration. X-ray studies reveal that rehydrated metakaolin possesses a structure similar to that of fireclay minerals. This finding is confirmed by infra-red absorption studies. Rehydrated metakaolin is more plastic than the original kaolin.

NEW RESEARCH SCHEMES SANCTIONED

On the recommendation of its Advisory Board, the Governing Body of the Council have sanctioned the following new research schemes:

1. Biochemical studies on the action of mycobacillin on skin pathogens both in vitro and in vivo—Dr. S. K. Bose, University College of Science & Technology, Calcutta.
2. Correlation of laboratory test results for consolidation, triaxial shear and unconfined compression with field load test results—Shri N. N. Majumdar, Road & Building Research Institute, Calcutta.
- 3, 4 & 5. Use of lime mortar and lime pozzolana mortar in place of cement; Corrosive constituents of the soils in Madras State; Correlation between Atterberg limits and the compression index and swelling index of soils—Shri S. Panchanathan, Irrigation Research, P.W.D., Madras.
- 6 & 7. Studies in addition polymerisation; Determination of molecular weights of addition polymers by end group method—Dr. G. S. Misra, Lucknow University, Lucknow.
- 8 & 9. Polyamide resins from vegetable oils and ethylene dichloride; Pilot plant manufacture of polyvinyl acetate resins from alcohol—Shri R. K. Bhatnagar, Shri Ram Institute for Industrial Research, Delhi.
10. Physical Oceanography—Dr. R. Ramanadham, Andhra University, Waltair.
11. Studies in synthetic perfumes—Dr. K. S. Narang, Punjab University, Hoshiarpur.
12. Geochemistry of soils and waters of North Gujarat—Shri A. M. Trivedi, L.D. Arts College and M.G. Science Institute, Ahmedabad.
13. Study of the reactive groups of collagen by desorption technique—Dr. Lourdu M. Yeddanaipalli, Loyola College, Madras.
- 14 & 15. Investigations of the regional tanning process such as (a) bag tanning process with a view to improve and modernise it and (b) Chinese process of chrome tanning with a view to study its chemical nature; Myrobalans as

substitute for wattle—Shri. M. Banerjee, Bengal Tanning Institute, Calcutta.

16. Fatigue life of aircraft structural components and fatigue problem in aircraft design—Shri S. Ramamritham, Civil Aviation Department, New Delhi.

17. Standardisation of methods of soil analysis for engineers in general and road engineers in particular—Dr. A. N. Puri, Field Research Station, Bombay.

18. Mechanics of sediment transportation and scour—Prof. J. Visweswara Rao, Indian Institute of Technology, Kharagpur.

19, 20 & 21. Studies on sand sizes and filter rates and automatic valveless gravity filters; Clarification of river derived water supplies with different types of clarifiers; A rheological survey of the Yamuna river between Wazirabad and Okhla at Delhi—Dr. S. V. Ganapati, Delhi Joint Water & Sewage Board, New Delhi.

22. Cultural, physiological and cytological studies of some aquatic Phycomycetes—Dr. R. K. Saxena & Dr. R. N. Tandon, Allahabad University, Allahabad.

23. Botanical survey of the flora of Andhra University Campus and Waltair—Dr. J. Venkateswarlu, Andhra University, Waltair.

24. Functional basis of differentiation in hydra—Prof. S. Mookerjee, Presidency College, Calcutta.

25. Cytology and taxonomy of the mosses in Calcutta and its neighbourhood—Prof. H. C. Gangulee, Presidency College, Calcutta.

26. Structural studies of Lower Gondwana fossil plants with more modern methods—Dr. D. D. Pant, Allahabad University, Allahabad.

27. Low temperature X-ray crystallography—Dr. S. Ramaseshan & Prof. R. S. Krishnan, Indian Institute of Science, Bangalore.

28. Relaxation time of elements in liquid medium—Dr. S. N. Ghosh, University of Allahabad, Allahabad.

29. Dispersion and temperature effect of ultrasonic velocity and absorption of ultrasonic waves in liquid by pulse method—Dr. B.

Ramachandra Rao, Andhra University, Waltair.

30. Emission spectra of halogens in the presence of argon and halogen magnetic resonance in substituted benzenes, diatomic halides and mixed halogens, and substituted methanes and silanes—Dr. P. Venkateswarlu, Aligarh Muslim University, Aligarh.

31. Synthesis of adhesives from indigenous sources for bonded web fabrics—Ahmedabad Textile Industry's Research Association, Ahmedabad.

THE FOLLOWING NEW SCHEMES have been sanctioned with effect from Sept. 11, 1957.

1. Nucleotide metabolism and biosynthesis of proteins—Dr. A. Sreenivasan, University Department of Chemical Technology, Bombay.

2. Cell metabolism with special reference to (a) variation of metabolic pattern in cellular adaption and (b) metabolic behaviour of sub-cellular fractions—Dr. B. C. Guha, University College of Science & Technology, Calcutta.

3. Carbohydrate metabolism with special reference to glucose cyclo-acetoacetate and its derivatives—Prof. M. C. Nath, Nagpur University, Nagpur.

CSIR PATENTS

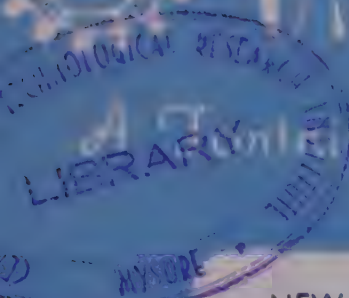
(APPLICATION FILED)

60732: Galvanic current generation in the utilisation of metal and alloy scraps containing copper—V. Aravamuthan, CECRI, Karaikudi.

An economical process for generating galvanic current from chemical reactions involving the electrolytic dissolution of scrap copper, brass, bronze or cupro-nickel is evolved. Useful galvanic current can be obtained at practically the same cost at which it is obtainable from galvanic cells in use at present. Numerous other advantages are claimed for the process.

(APPLICATION SEALED)

55171: Treatment of cashewnut shell liquid for use in electrical insulating varnishes—K. R. Thakar & J. Gupta, NCL, Poona.



NEW DELHI - OCT. 12, 1957 ● ASVINA 20, 1879

Personal

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been elected Vice-President, Indian Science News Association, Calcutta, for the year 1957-58.

*SHRI T. N. SESHADRI has been appointed Asstt. Director, CBRI, Roorkee, with effect from Sept. 10, 1957.

*SHRI M. J. SAHANI has been appointed, on promotion, Design Engineer, NML, Jamshedpur.

*SHRI N. S. RAMAMURTHI has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur.

*SHRI R. S. MATHUR has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur.

*DR. R. K. SRIVASTAVA has been appointed, on promotion, Publications Officer, CFRI, Jealgora.

*SHRI S. GHOSH has been appointed, on promotion, Geologist, CFRI, Jealgora.

*SHRI RAVINDRA SINGH has been appointed Junior Scientific Officer, NML, Jamshedpur, with effect from Aug. 8, 1957.

*SHRI V. K. VAISH has been appointed, on promotion, Junior Scientific Officer, CGCRI, Calcutta

*SHRI S. C. MAZUMDAR has been appointed, on promotion, Junior Scientific Officer, CGCRI, Calcutta.

*DR. A. LAHIRI, Director, CFRI, Jealgora, has been nominated member of the reconstituted Advisory Committee on Stowing, Department of Mines & Fuel, under the Union Ministry of Steel, Mines and Fuel.

*DR. B. R. NIJHAWAN, Director, NML, Jamshedpur, has been nominated member of the Standing Advisory Committee for the Department of Metallurgy, Indian Institute of Science, Bangalore.

*DR. Y. NAYUDAMMA, Assistant Director-in-charge, CLRI, Madras, has been nominated member of the Export Promotion Advisory Board for the Southern Region.

*DR. Y. NAYUDAMMA, Assistant Director-in-charge, CLRI, Madras, left for Rome on Sept. 18, 1957 to participate in the International Conference of Leather Chemists' Societies (Sept. 16-23, 1957). Dr. Nayudamma will also visit tanneries, leather institutes and leather industries in England, France, Italy and West Germany during his six weeks' tour.

*DR. N. G. BASAK, Asstt. Director, CFRI, Jealgora, has been nominated CSIR representative on the Coal Carbonization Products Sec-

tional Committee of the Indian Standards Institution.

*SHRI S. K. DAS GUPTA, Asstt. Director, CFRI, Jealgora, has been nominated CSIR representative on the reconstituted Oil Burning Domestic Appliances Sectional Committee of the Indian Standards Institution.

*DR. GIRDHARI LAL, Asstt. Director, CFRI, Mysore, has been nominated on the Committee to be set up by the Indian Council of Agricultural Research for the establishment of Regional Research Stations for Fruit and Vegetable Preservation.

*DR. C. R. KRISHNA MURTI, Senior Scientific Officer, CDRI, Lucknow, left for U.K. on Aug. 31, 1957 under the Technical Cooperation Scheme of the Colombo Plan. Dr. Krishna Murti will work in the University of London on Enzymes and Polypeptides of Therapeutic Value.

THE PRIME MINISTER, SHRI Jawaharlal Nehru visited the Central Food Technological Research Institute, Mysore on Sept. 20, 1957. He was received and shown round by Dr. V. Subrahmanyam, Director, CFTRI. Shri Nehru showed keen interest in the processes and products developed at the Institute and expressed pleasure at the progress made, particularly in the practical application of the findings of the Institute. He congratulated the Director and the staff on the excellent work done at the Institute.



CFTRI, MYSORE—The Prime Minister receives a copy of the inaugural number of *Khadya Vignyan* presented to him on the occasion of his visit to the Institute

BRIEFS

THE ATTERBERG'S PLASTICITY number and workability of Indian clays are being investigated in the Department of Applied Chemistry, Calcutta University, under a research scheme financed by the CSIR.

The plastic property of clay is influenced by the mineralogical composition and particle-size distribution. Ball and bentonite clays are more plastic than kaolins. The limits of plasticity provide a rough indication of the nature of minerals present. Plasticity numbers of synthetic clay mixtures (obtained by mixing different clays in varying proportions) were also determined. The plasticity of some clays is greatly reduced by the addition of sodium hydroxide, while that of others is enhanced.

THE EFFECT OF INORGANIC SALTS, carbohydrates and fatty acids on the growth and sporulation of *Bacillus subtilis* (isolated from spoiled vegetable cans) and on the heat resistance of spores obtained therefrom has been investigated at the College of Engineering & Technology, Calcutta, under a research scheme financed by the CSIR.

It has been observed that low concentrations (up to 0.01 per cent) of sodium chloride increase the resistance of spores to thermal destruction. At higher concentrations, the spores are less resistant. The effect of calcium chloride is more pronounced. At equimolar concentrations (0.01 per cent sodium chloride) the time for 99.9 per cent destruction is 3.05 minutes with calcium chloride addition and 3.8 minutes with sodium chloride addition.

Iron is essential for proper germination and growth of spores. Zn^{++} , Mg^{++} and K^{+} have little effect on growth rate but sporulation is adversely affected in media deficient in Zn^{++} . Calcium chloride (0.005-0.05 per cent) does not inhibit spore formation and growth.

The resistance of spores to thermal destruction is not affected by the presence, in the medium, of starch, up to 1 per cent. Thermal resistance decreases with increase in sucrose concentration up to 55 per cent. Thermal resistance is also affected by fatty acids, the

effect being correlated with the molecular weight of the acid.

ACCORDING TO THE ANNUAL REPORT for 1956-57, The Indian National Scientific Documentation Centre, NPL, New Delhi received 5,142 requests for supply of copies of scientific papers, 701 for translation of scientific articles and 110 for compilation of bibliographies. Requests for the supply of copies of papers published in Indian scientific periodicals were received from 19 countries.

The Indoc issues the following periodicals: *Indoc List of Current Scientific Literature* (semi-monthly), *Annals of Library Science*, (quarterly), and *Bibliography of Scientific Publications of South and South East Asia* (quarterly).

The Centre conducted a six weeks' training course in scientific documentation for librarians selected from Ceylon, Burma, Thailand and India.

THE FOLLOWING RESEARCH SCHEME has been terminated with effect from April 1, 1957:

Study of the rate of decomposition of insecticidal deposits—Dr. N. V. Subba Rao, Osmania University, Hyderabad.

CSIR PATENTS

(APPLICATIONS FILED)

60555: *Production of liquid rubber*—Uma Shanker, NCL Poona.

Liquid rubber is finding increasing applications in the manufacture of rubber goods like printing rollers, gaskets, adhesives, linings, prototype components for engineers and conductive rubber and electrical potting compounds. A new process and a simple plant to make liquid rubber have been developed. The process dispenses with the use of chemicals usually employed in hitherto known processes as starting materials and provides rubber with increased fluidity which aids compounding operations.

60733: *Galvanic current generation in the utilisation of metal and alloy scraps containing lead*—V. Aravamuthan, CECRI, Karaikudi.

The chemical reaction involving the electrolytic dissolution of lead in nitric acid is made use of for the generation of useful galvanic current. Lead scrap such as that obtainable from discarded lead storage batteries, cable sheaths,

etc. can be used. Optimum conditions have been established to derive the voltage and discharge characteristic from the galvanic system.

60734: *Galvanic current generation in the utilisation of metal and alloy scraps containing iron*—V. Aravamuthan, CECRI, Karaikudi.

Chemical reactions involved in the electrolytic dissolution of nickel-chromium, nickel-chromium-iron in ferric chloride solution have been used for generation of useful galvanic currents economically. Optimum conditions have been fixed to obtain voltage and discharge characteristic of certain similar size of cells such as Daniel cell or Primary alkaline copper oxide cells in which copper oxide is kept in a loose form. The cells of this system are efficient and are cheap substitutes for telecommunication purposes.

(APPLICATIONS ACCEPTED)

55757: *A Process for the preparation of long-chain unsaturated ketones and 1-w-keto dicarboxylic acids from the ketones*—B. Menon, U. G. Nayak, R. K. Razdan, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

56391: *A process for the preparation of civetone dicarboxylic acid (8-keto-pentadecane-1:15-dicarboxylic acid)*—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

58244: *An improved method for the production of titanium tetrachloride from ilmenite*—P. P. Bhatangar & T. Banerjee, NML, Jamshedpur.

58757: *An improved syphon*—C. R. Gupta, NPL, New Delhi.

(APPLICATIONS SEALED)

55452: *Manufacture of neutral glass*—Atma Ram & S. Kumar, CGCRI, Calcutta.

55454: *A process for the wet grinding of mica*—Atma Ram & S. B. Roy, CGCRI, Calcutta.

55546: *Improvements in or relating to ion-exchange materials*—C. S. Ramakrishnan & N. Krishnaswamy, NCL, Poona.

55816: *Improvements in or relating to the removal of inorganic sulphur compounds from industrial gases*—N. G. Basak, A. C. Mazumdar & A. Lahiri, CFRI, Jealgora.

National Laboratories

National Chemical Laboratory, Poona

Detection and Estimation of Vanadium

Sodium catechol disulphonate (Tiron) has been employed for the spot test and estimation of vanadium (0.3-50 p.p.m). It produces a stable and soluble bluish violet-coloured complex in weakly acidic medium. Absolute alcohol increases the colour intensity and stability of the vanadium-tiron complex. The reaction is comparable to that with benzohydroxamic acid in both selectivity and sensitivity.

National Metallurgical Laboratory, Jamshedpur

Moulding Characteristics of Allahabad Sand

The suitability of Allahabad sand (A.F.A. fineness No. 91.1; 22 per cent fines) for steel moulding purposes has been studied. The sample assayed 98 per cent silica with small percentages of lime, magnesia and alkalies.

The sand bonded with 5 per cent Bihar bentonite and tempered to 3.2 per cent moisture, showed poor moulding characteristics (green permeability, 80; compressive strength 4.9 lb./sq. in.). By washing the sand in a hydro-classifier, a fairly clean and well graded product (A.F.A. fineness No. 54.4; 2.38 per cent fines) was obtained, which by appropriate additions of Rajasthan bentonite, dextrin, Kordek, double boiled linseed oil, silica flour, etc., gave a mix with good moulding characteristics. Green sand moulds and baked cores prepared from the mixture were suitable for light and medium steel castings.

Steel Production by L. D. Process

A pilot basic-lined converter (capacity, 0.1 ton of molten metal) for the production of steel by Linz-Donawitz (L.D.) process has been designed and set up at the Laboratory. Trials with the converter have yielded useful data.

The L.D. process has certain advantages over the usual Bessemer practice employed in India. Indian pig iron with medium phosphorus content (too low for basic Bessemer practice and too high for acid



NML, JAMSHEDPUR—Pilot converter for the production of steel by L. D. process designed and fabricated in the Laboratory

Bessemer practice) can be processed in one stage by lancing oxygen under pressure, thus eliminating carbon and phosphorus simultaneously; steel produced by the process is low in nitrogen. The process has topical significance as Messrs Hindustan Steel Private Ltd., Rourkela, have programmed to produce 75 per cent of their steel by this process.

Central Food Technological Research Institute, Mysore

Ascorbic Acid in Tomato Ketchup

Investigations on the stability of natural and added ascorbic acid in fruit products are in progress at the Institute. Twenty eight per cent of the ascorbic acid present in fresh tomato ketchup is retained after 12 months' storage, as in the case of jams and jellies. The loss of ascorbic acid is much more in partially filled bottles.

Walnut Kernel & Insect Infestation

Walnut kernels packed in polyethylene bags (300 gauge) may be fumigated with methyl bromide either at atmospheric pressure or at reduced pressure; those packed in cellophane bags can be treated only at reduced pressure. Bagged kernels, after fumigation, may be packed in lindane-impregnated dealwood cases for protection from infestation.

Central Drug Research Institute, Lucknow

Amoebicidal Compounds

The sensitivities of *Entamoeba histolytica* and three free-living amoebae, *Naegleria gruberi*, *Schizopyrenus russelli* and *Didascalus thorntoni*, to amoebicidal compounds have been investigated. Emetine is more active on *E. histolytica* than free-living amoebae, whereas conessine is more active on amoebae than emetine; arsenic derivatives of thiazole and morpholino and piperidino substituted nonanes show a high correlation between the sensitivities of *E. histolytica* and the amoebae; and the amoebae among themselves are equally responsive to various compounds, but their amoebicidal endpoints are different from the values obtained with *E. histolytica*.

Central Building Research Institute, Roorkee

Curved Shell Walls

A process for the manufacture of pre-cast, doubly curved shell elements for roofs, floors and panel walls has been worked out. The process consists in providing a flexible mould of hessian (kept in position by a support underneath), casting cement concrete, lime surkhi, or light-weight concrete, and thereafter removing the support from underneath the hessian. Hollow panel walls fabricated by using doubly curved shell elements are lighter than traditional brick walls and possess better insulating properties. They are particularly well adapted for tropical climates and their fabrication and erection do not call for highly skilled labour. The use of burnt clay confers improved properties, though at a slight additional cost, over the cost of traditional mud walls. Curved shell walls offer an ideal solution for village housing.

Central Electrochemical Research Institute, Karaikudi

Electrolytic Perchlorate

The optimum conditions for the electrolytic oxidation of chlorate to perchlorate have been investigated. A current efficiency of 85 per cent has been attained in large scale trials. A rapid and reliable method for the estimation of chloride, chlorate and perchlorate in the presence of one another has been developed.

RESEARCH PAPERS

INFRA-RED ABSORPTION BY COPPER AND NICKEL MANGANITES—Sharda Dasgupta & A. P. B. Sinha, NCL, Poona. *Trans. Faraday Soc.*, 53 (1957), 909.

The infra-red spectra of nickel and copper manganites formed in solid state are analysed. The optical activation energy and the force constants for the stretching of bonds between the oxygen ions and the octahedral or tetrahedral cations have been calculated. The calculated force constants are used to evaluate the compressibility and the Debye temperature for these substances.

ON THE STRUCTURE OF SOME MANGANITES—A. P. B. Sinha, N. R. Sanjana & A. B. Biswas, NCL, Poona. *Acta Cryst.*, 10 (1957), 439.

The crystal structure of some manganite semi-conductors is described. The crystal distortion in these compounds is explained on the basis of the preferential formation of certain hybridized orbitals by the cations present. In certain cases an electron transfer process, taking place in solids at elevated temperature, is postulated and justified on quantum mechanical considerations.

STUDIES IN POLYPODIACEAE—IV. DRYMOGLOSSUM PRESL.—B. K. Nayar, NBG, Lucknow. *J. Indian bot. Soc.*, 36 (1957), 169-79.

A phylogenetical evaluation of the morphology of the sporophyte and the gametophyte of *Drymoglossum piloselloides* (L) Presl. (3 varieties) collected from North East and South West India is made. Morphology and ontogeny of the palae, rhizome, frond, spores, prothallus and sex organs are studied and compared with related genera. It is concluded that contrary to the current conception, *Drymoglossum* may not be a direct descendant of *Pyrrosia*, but may have branched off from a common ancestor during the evolution of the latter genus.

ADVERTISEMENT

Applications are invited for the undermentioned posts. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Requests for forms must specify details of the post.

The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well qualified and experienced candidates.

Application forms duly filled in and accompanied by crossed Indian postal order for Rs. 7.50 (Rs. 1.37 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Number of advertisement and the post applied for must be indicated at the top of the application form. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

CENTRAL FUEL RESEARCH INSTITUTE, JEALGORA

(Advertisement No. 66)

1. Assistant Director (Engineering): Scale of pay, Rs. 1,000—50—1,200—100—1,500.

QUALIFICATIONS: High academic qualifications in mechanical and electrical engineering with considerable and varied practical experience, especially in estimation for projects in coal industry and coal utilisation.

2. Senior Scientific Officer Grade II: Scale of pay, Rs. 350—30/2—410—30—590—E. B.—30—770—40—850.

QUALIFICATIONS: High academic qualifications in chemistry with research experience preferably in ion exchange compounds and in problems of treatment of industrial effluents.

Last date for the receipt of applications, Oct. 28, 1957.

CENTRAL BUILDING RESEARCH INSTITUTE, ROORKEE

(Advertisement No. 68)

1. Senior Scientific Officers Grade I (2 posts): Scale of pay, Rs. 600—40—1,000—50/2—1,150.

QUALIFICATIONS: For one post—High academic qualifications in civil engineering with adequate experience in research or teaching in soil engineering. Candidate with a post graduate degree in soil engineering and experience of large scale construction projects will be preferred. For the other post—Degree in Architecture from a recognised Institute or equivalent qualifications with five years professional experience. Qualifications and experience as Town Planner or Quantity Surveyor would be preferred.

2. Senior Scientific Officer Grade II (Information): Scale of pay, Rs. 350—30/2—410—30—590—E. B.—30—770—40—850.

QUALIFICATIONS: High academic qualifications with varied experience in building and civil engineering works. Ability to handle technical enquiries will be an additional qualification.

3. Civil Engineer: Scale of pay, Rs. 300—25—600.

QUALIFICATIONS: An engineer with adequate experience of supervising building construction.

4. Junior Scientific Officer: Scale of pay, Rs. 275—25—500—E.B.—30—590.

QUALIFICATIONS: A degree in science and a degree or diploma in civil engineering with adequate experience in the maintenance and handling of engineering and scientific stores in a Government or non-Government organisation of repute.

Last date for the receipt of applications, Nov. 15, 1957.

NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR

Announcing the publication of:

1. SYMPOSIUM ON INDUSTRIAL FAILURE OF ENGINEERING METALS & ALLOYS

(Size : 9½" x 11", Pages : VIII+397)

Price: Rs. 20 per copy (Postage extra)

2. SYMPOSIUM ON NON-FERROUS METAL INDUSTRY IN INDIA

(Size: 8"x10½", Pages : XXVI+297)

Price: Rs. 20 per copy (Postage extra)

For copies, write to:

The Director, National Metallurgical Laboratory, Jamshedpur-7.

Meetings

A meeting of the *Executive Council of the National Botanic Gardens* will be held at Lucknow on Sunday, Nov. 10, 1957 at 4.00 p.m. Dr. Sampurnanand, Chief Minister, U.P. will preside.

A meeting of the Committee constituted by the Governing Body to examine the *Establishment/Development of Botanical Gardens in various States* will be held at the NBG, Lucknow on Nov. 10, 1957 at 2.30 p.m. Col. R. N. Chopra will preside.

Personal

*DR. N. G. BASAK, Assistant Director, CFRI, Jealgora, is acting as Director, CFRI, in the absence on leave of Dr. A. Lahiri from Oct. 7 to Nov. 7, 1957.

*DR. H. V. K. UDUPA has been appointed, on promotion, Assistant Director, CECRI, Karaikudi.

*SHRI M. R. K. RAO has been appointed, on promotion, Senior Scientific Officer Grade II, NML, Jamshedpur.

*SHRI B. A. SHENOI has been appointed, on promotion, Junior Scientific Officer, CECRI, Karaikudi.

*DR. K. K. CHAKRAVARTY, Senior Scientific Assistant, NCL, Poona, has been appointed Junior Scientific Officer, *Essential Oils Research Centre*, NCL.

*SHRI H. J. VENKATA KRISHNA, Senior Scientific Assistant, NCL, Poona, has been appointed Junior Scientific Officer, *Essential Oils Research Centre*, NCL.

*SHRI G. K. CHANDIRAMANI, Special Officer (Technical Education), Union Ministry of Education and Scientific Research (Department of

Scientific Research and Technical Education), has resigned from the membership of the Board of Scientific & Industrial Research and the Committee of the Board.

*DR. K. VENKATARAMAN, Director, NCL, Poona, has been nominated member of the *Governing Body of the Indian Lac Cess Committee*. Dr. S. L. Kapur, Assistant Director, NCL, has been nominated alternate member.

*DR. S. N. PRASAD, Asstt. Director, CGCRI, Calcutta, has been nominated member and convener of the *Liquid Gold Sub-Committee* of the Indian Standards Institution. Dr. S. Sen, Senior Scientific Officer, CGCRI, Calcutta, has been nominated alternate member.

*SHRI G. S. RAMASWAMY, Asstt. Director, CBRI, Roorkee, has been nominated member of the *Pozzolanic Cements and Blended Cements Sub-Committees* set up by the *Technical Committee on Cement* of the Government of India.

*SHRI H. V. BASKAR RAO, Senior Scientific Officer, NML, Jamshedpur, has been nominated CSIR representative on the *Panel for Classification of Clays for Ceramic Industry* of the *Refractories Sectional Committee*, Indian Standards Institution.

*SHRI S. C. LAHIRY, Director of Inspection (Metallurgical), Tata-nagar, has been nominated member of the *CSIR Metals Research Committee* till March 31, 1959.

*DR. I. B. CHAKRAVARTY, Chief Technologist, Indian Jute Mills Association Research Institute, Calcutta, has been nominated Investigator-in-charge of the research scheme: *Development of jute resins (natural and synthetic) combination in place of Dr. W. G. Macmillan.*

*SHRI A. KRISHNAMURTHI, Assistant Editor, Publications Directorate, CSIR, who had been deputed to the United States of America for training in the collection, preparation and dissemination of scientific information under the Point Four Programme, returned to Delhi and resumed duty on October 8, 1957.

*The following officers of CFRI, Jealgora, proceeded to U.K. on Oct. 2, 1957 for specialised training for 3 months in the subject noted against their names. The training programme has been arranged by the National Coal Board.

SHRI N. N. DAS GUPTA, Asstt. Director—*Coke Manufacture*.

SHRI A. K. MOITRA, Officer-in-charge, Raniganj Coal Survey Station, Raniganj—*Coal Survey*.

SHRI S. GUPTA, Officer-in-charge, B. R. K. Coal Survey Station, Ranchi—*Coal Survey*.

SHRI K. C. LAHIRI, Officer-in-charge, Central India Coal Survey Station, Bilaspur—*Coal Survey*.

*SHRI K. Y. SHRIKHANDE, Junior Scientific Officer, CFRI, Jealgora, proceeded to U. K. on Sept. 12, 1957 for 6 months for training in *Low Temperature Carbonization* at the Fuel Research Station, U.K., under the Colombo Plan.

*SHRI P. S. VENKATACHALAM, Junior Scientific Officer, CLRI, Madras, left for U.K. on Aug. 24, 1957 under the Colombo Plan Scholarship for training in *Leather Dressing*.

*SHRI H. C. CHAKRAVARTY, Senior Scientific Assistant, CFRI, Jealgora, proceeded to U.K. on Sept. 12, 1957 for 6 months for training in *Low Temperature Carbonization* at the Fuel Research Station, U.K., under the Colombo Plan.

*SHRI M. PANCHOLY, Senior Scientific Officer, NPL, New Delhi, has been awarded Ph.D. degree by the University of Delhi for his thesis: *Studies in ultrasonic propagation in liquid media*.

*DR. S. K. GUPTA, Junior Scientific Officer, CDRI, Lucknow, has been admitted to the D. Phil. degree in Medicine of the Calcutta University for his thesis entitled: *The therapeutic activity of some sulphones and sulfoxides in experimental tuberculosis of guinea pigs*.

BRIEFS

THE FOURTH VOLUME IN THE series *Raw Materials of the Wealth of India* has been published by the CSIR. The volume, which follows the pattern adopted in the previous volumes, covers a wide field of plant, animal and mineral resources of the country and contains articles beginning with letters F and G. The plant resources are dealt with under their botanical names, while the animal and mineral resources are given under their common names. There are nearly 340 entries of which more than 90 per cent relate to plant resources. Among the important entries included are: *Ferula* (Asafoetida), *Ficus* (Fig), *Foeniculum* (Fennel), *Fungi*, *Garcinia* (Mangosteen), *Gardenia*, *Glycine* (Soybean), *Glycyrrhiza* (Mulhatti), *Gossypium* (Cotton), *Grewia* and *Guizotia* (Nigerseed) among the plants; Felspar, Fluorite, Fuller's Earth, Garnet, Gold, Graphite and Gypsum among minerals; and Flying foxes & other Bats, and Fur & Fur bearing animals among animal resources. The article on Fish & Fisheries will be issued as a separate supplement.

As in the previous volumes, the articles are based on a critical evaluation of published information on each product, collected and collated from books, periodicals, reports and other publications, including those of Government departments and institutions. Brevity and conciseness have been kept foremost in view, but in order to facilitate those interested in further information, copious references are given to original sources of information. Illustrations in colour, photographs, line drawings, maps, tables and graphs have been included at suitable places to supplement the descriptions. The information is presented in a manner understandable and useful to both laymen and scientists.

The 287-page publication printed on art paper (size 11 in. x 8½ in.) includes thirteen plates and one hundred and forty-five text figures. Copies (Price: Rs. 25 per copy) are available from the Publications Directorate, CSIR, Old Mill Road, New Delhi-2.

EFFECTS OF RADIATION AND RADIO-mimetic chemicals on the chromosomes of grasshopper (*Gesonula punctifrons*) have been studied at the Department of Zoology, Cal-

cutta University, under a research scheme financed by the CSIR.

The changes induced by radioactive phosphorus on the meiotic chromosomes of *G. punctifrons* were studied at different conditions of treatment. A solution of radioactive phosphorus (radioactivity, 3:75-60:0 µc./cc.) produced chromosome aberrations like chromatid fragments, dicentric bridges with fragments, pseudo-chiasmata, and lagging chromosomes. The frequency of fragments varies directly with the concentration of radioactive phosphorus solution. The frequency of dicentric bridges is about one-tenth of the number of fragments obtained at different dosages.

X-ray irradiation conducted in air yields 13.9 per cent of dicentric bridges in anaphase cells, while in nitrogen 4.7 per cent of bridges are obtained, showing that a lower oxygen concentration than that obtaining in air decreases the number of radiation-induced chromosome breakage.

SYNTHESIS AND PHARMACOLOGY OF coumarin compounds having activity on the cardio-vascular and respiratory systems have been studied under a CSIR research scheme jointly investigated at the Department of Chemistry, University of Delhi and the All India Institute of Medical Sciences, New Delhi.

Twenty coumarin derivatives (methyl, hydroxy, methoxy, phenyl-methoxy, phenylhydroxy, phenyl-methylhydroxy, nitrophenyl and furano coumarins), synthesised by employing the standard methods, were tested for their anti-veratrinic action by the method of Arora and Krayar. Furano, dihydrofurano, 4-phenyl-7 methoxy, and 3-phenyl-7-methoxy coumarins were found to be most active. The following general inferences on the relative values of various substituents in the basic coumarin skeleton with regard to the anti-veratrinic action were made: (1) Methylation of hydroxyl groups increases the activity, a free hydroxyl group being unfavourable; (2) 3-or 4-phenyl substitution is highly favourable but it is disadvantageous to have a nitrophenyl group; and (3) a furan ring condensed to the benzene ring has activity similar to that of phenylcoumarin.

DIELECTRIC CONSTANT AND DIELECTRIC loss of indigenous oils in 3 cm.

region using standing wave technique of measurements have been determined at the Department of Physics, University of Lucknow, under a research scheme financed by the CSIR.

All the oils examined (turpentine, linseed, til, mustard and groundnut) with the exception of turpentine oil showed nearly similar relative permittivity and dielectric loss and had a dielectric constant of c. 2.4 and loss tangent of c. 0.04.

SHRI DILIP KUMAR MAJUMDAR has been awarded a CSIR Junior Fellowship for research under the scheme, Quantum mechanics of molecular interactions, in progress at the University College of Science & Technology, Calcutta.

CSIR PATENTS

(APPLICATIONS FILED)

60867: Processing of banana pseudo stem for use as a cushioning material—N. V. R. Iyengar, B. Anandaswamy & H. B. N. Murthy, CFTRI, Mysore.

The pseudo-stem of the banana plant left after harvesting, does not find much use at present. A process has been developed to find an economic use of the pseudo-stem by converting it into a pliable, soft flat material having cushioning properties. The cushioning property is developed in such a manner that the corrugated structure of the leaf bases is maintained as far as possible. The material can be used in the foot-wear industry as a substitute for cardboard and in packaging as a substitute for plywood.

60921: Improvements in the method for manufacture of ether—V. V. Deshpande, A. Ramalingam & N. R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

The patent relates to an improved process for the manufacture of ether (solvent grade and anaesthetic grade) complying with B.P. specifications. The process, which utilizes the combined technique of fluid bed followed by static bed for dehydration of alcohol, is thermally very efficient and gives yields almost of the same order as the sulphuric acid process; by adopting the improved process there is no corrosive action on the materials of construction as in the case of the sulphuric acid process.

(Contd. on p. 4, col. 1.)

National Laboratories

National Physical Laboratory, New Delhi

Epitaxial Growth of Silver Crystals

The epitaxial growth of silver crystals formed during the process of evaporation in vacuum on cleaved surfaces of rock salt, magnesia and mica heated to various temperatures has been studied by the electron-diffraction method. In the case of thin films of silver deposited on rock salt a new orientation resulting in a hexagonal structure (having $c/a=1.60$) besides the usual face-centred cubic structures obtained on the substrata is observed.

National Metallurgical Laboratory, Jamshedpur

Magnesite Refractories

A composition for making bricks from magnesite from Almora Dt. (U.P.) has been developed. Quarter size and full size bricks prepared by using the composition compared favourably with those imported. The magnesite unlike magnesite from Salem or Mysore does not require the addition of mill scale or iron oxide to promote sintering and is similar to Austrian magnesite. The commercial exploitation of these deposits is expected to be economical as compared to Salem and Mysore magnesite due to their proximity to the steel plants.

Central Fuel Research Institute, Jealgora

Dilatometric Properties of Coal

The dilatometric properties of Indian coals (Jharia, Raniganj, Giridih, Bokaro and Madhya Pradesh) have been studied using the Sheffield Laboratory Coking Test apparatus. The characteristic temperatures of contraction and expansion and the percentage of swelling have been correlated with the rank of coal. On the basis of dilatometric behaviour, a classification has been suggested for Indian coals with respect to their coking properties. The influence of test conditions, artificial oxida-

tion and inert contents of coal on the dilatometric behaviour has been studied. An increase of ash content of coal by 1 per cent reduces the expansion by 3 per cent; some coals show higher expansion on oxidation. Indian coals give satisfactory cokes even though there is no indication of swelling in the Sheffield Coking Test.

Central Food Technological Research Institute, Mysore

Organic Acids in Pickling Mangoes

The presence of oxalic, citric, malic, succinic and two unknown acids with R Suc. values of 0.29 and 0.41 in fresh unripe pickling mangoes has been established by paper chromatographic technique. Salted mango slices (20 per cent salt) after one year's storage showed the presence of all the acids except ascorbic acid; lactic acid is not detected in fresh and salted slices.

Sulphur Content of Asafoetida

A photometric method has been developed for the determination of organic sulphur in asafoetida. An aqueous emulsion of asafoetida is prepared and treated with zinc and acid to reduce the organic sulphur. The hydrogen sulphide formed is estimated by reaction with *p*-amino dimethyl aniline hydrochloride in the presence of ferric ammonium sulphate. The reagent is more sensitive than lead acetate or sodium nitroprusside.

Central Road Research Institute, New Delhi

Stabilised Sand for Road Construction

The cost of construction of the conventional type of stone metal roads in desert areas is high due to the scarcity of water and stone. Investigations carried out at the Institute have shown that locally available fine sand can be used for road construction after stabilisation with bituminous binder. A semifield test track has been constructed at the premises of the Institute to work out specifications for bituminous stabilisation.

RESEARCH PAPERS

A DIRECT METHOD FOR THE CONSTRUCTION OF MIDDINGS CURVE—Sanat K. Mukherjee & A. K. Moitra, CFRI, Jealgora. *Indian Min. J.*, 5(5) (1957), 10-11.

The recovery of middlings from coal and their ash content have been represented by means of a simple curve. The curve gives all information on the middlings produced, making tabulated results unnecessary.

MODERN COAL WASHING: A PROGRESS REVIEW—G. G. Sarkar & A. Lahiri, CFRI, Jealgora. *Indian Min. J.*, 5(7) (1957), 1-3.

The first paper in the series of a comprehensive review of the various developments in the washing of coal, discusses the initial planning for coal washing.

DECOMPOSITION OF ALCOHOLS OVER A FISCHER-TROPSCH IRON CATALYST—S. R. Srinivasan & N. G. Basak, CFRI, Jealgora. *Fuel*, 36 (1957), 277-285.

The decomposition of lower aliphatic alcohols at normal pressure over a Fe: Cu: MgO: K₂O catalyst and high vapour space velocities is reported. Ethanol and isopropanol decompose almost completely, while isobutanol (about 70 per cent) reacts under the same conditions. Hydrocarbons and high boiling condensation products are easily formed from ethanol, and yields of these products fall off with the increase in the molecular weight of alcohols. That free methylene radicals are formed is evident from the chain lengthening of various products. Olefines, carbon monoxide and hydrogen formed during decomposition may subsequently condense to give 'OXO' products. Ester yields are high for ethanol.

TRANSPORT COEFFICIENTS AND FORCE BETWEEN UNLIKE MOLECULES—S. C. Saxena, Indian Association for the Cultivation of Science, Calcutta. *Indian J. Phys.*, 31 (1957), 146-55.

Elaborate computations have been made of the transport coefficients of binary gas mixtures, viz., binary viscosity, diffusion and thermal conductivity, with a view to test the adequacy and appropriateness of the Lennard-Jones 12:6 model in representing the like and unlike interactions of gaseous molecules.

PATENTS

(Contd. from p. 2, col. 3)

61484: *Improvements in or relating to the refining of crude cottonseed oil*—T. R. Seshadri & K. Chander, University of Delhi, Delhi.

The process relates to the refining of crude cottonseed oil and removal of gossypol in one step. The process has advantages over the conventional alkali refining process as the amount of alkali used is less, the refined oil shows no colour reversion and the soap manufactured from it is much less coloured.

61771: *An improved process for the conversion of high sulphur coals into ion exchanger for water softening and the like*—M. S. Iyengar, S. Guha, M. L. Beri & A. Lahiri, CFRI, Jealgora.

The process provides a new use for the organic sulphur present in coals for making ion exchangers. It can also be employed for effecting considerable reduction in the use of sulphuric acid in the conventional method of sulphonation of high sulphur coals.

(APPLICATIONS SEALED)

54907: *An under reaming tool*—D. Mohan & G. R. S. Jain, CBRI, Roorkee.

54949: *An electrical device for double action on/off control*—S. L. Sastry, NCL, Poona.

54998: *An improved process for the production of enzyme bates for leather manufacture*—S. Bose, S. C. Dhar & (Late) B. M. Das, CLRI, Madras.

55817: *Improvements in or relating to the removal of organic sulphur from industrial gases*—N. G. Basak, A. C. Mazumdar & A. Lahiri, CFRI, Jealgora.

56310: *Device for testing the horse power, pulling capacity and/or endurance of animals or moving bodies*—V. Cadambe & C. R. Gupta, NPL, New Delhi.

56935: *Manufacture of ethylene dichloride*—R. K. Bhatnagar, N. R. Kuloor & D. N. Daruvalla, Shri Ram Institute for Industrial Research, Delhi.

58085: *A sealing device for containers*—C. R. Gupta, NPL, New Delhi.

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The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well qualified and experienced candidates.

Application forms duly filled in and accompanied by crossed Indian postal order for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Number of advertisement and the post applied for must be indicated at the top of the application form. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

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Organic chemists should have had research experience in essential oils or synthetic drugs or coal tar products and candidates in mechanical and/or electrical engineering should have had adequate workshop experience. Knowledge of design and operation of pilot plant and foreign languages other than English will be an additional qualification. Last date for the receipt of applications, Nov. 19, 1957.

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ANNOUNCEMENTS

Directors' Conference

A conference of the Directors of National Laboratories will be held at the National Physical Laboratory, New Delhi on Nov. 16-17, 1957. The Prime Minister, Shri Jawaharlal Nehru will inaugurate the conference.

Meetings

The meeting of the *Executive Council* of the National Botanic Gardens, which was scheduled to be held on Nov. 10, 1957, will be held at Lucknow on Sunday, Dec. 1, 1957 at 4.00 p.m. Dr. Sampurnanand, Chief Minister, U.P. will preside.

The meeting of the Committee constituted by the Governing Body to examine the *Establishment/Development of Botanical Gardens in various States*, which was scheduled to be held at NBG, Lucknow on Nov. 10, 1957, is postponed to Dec. 1, 1957. Col. R. N. Chopra will preside.

Insdoc Training Course

A four-week in-service training course in *Scientific Documentation Techniques* for librarians working in the National Laboratories was instituted by the Insdoc in October 1957. The librarians are receiving the training in batches of two.

Prof. M. S. Thacker

PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, left for Moscow on Oct. 31, 1957, to attend the Special Session (Nov. 2-10) of the *U.S.S.R. Academy of Sciences* in connection with the celebration of the *Fortieth Anniversary of the Great October Revolution*, as the repre-

sentative of the Government of India.

PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been elected President of the *Mechanical Engineers' Association (India)*. The Association will hold its Annual Session at New Delhi in December 1957.

Personal

* DR. H. V. K. UDUPA has been appointed, on promotion, Asstt. Director (Electrolytic Cells), CECRI, Karaikudi, with effect from Oct. 21, 1957.

* SHRI R. C. VERMA has been appointed Mechanical Engineer, NML, Jamshedpur, with effect from Oct. 11, 1957.

* SHRI G. L. NANDA has been appointed Senior Scientific Officer Grade II (Teaching), CFTRI, Mysore, with effect from Oct. 11, 1957.

* SHRI P. R. GUPTA has been appointed Publicity Officer, Publications Directorate, CSIR, with effect from Nov. 1, 1957.

* SHRI P. K. RAMANATHAN has been appointed, on promotion, Junior Scientific Officer, CFTRI, Mysore, with effect from Oct. 11, 1957.

* SHRI N. S. KAPUR has been appointed, on promotion, Junior Scientific Officer, CFTRI, Mysore, with effect from Oct. 11, 1957.

* DR. J. S. PRUTHI has been appointed, on promotion, Junior Scientific Officer, CFTRI, Mysore, with effect from Oct. 11, 1957.

* SHRI S. K. DAS GUPTA has been appointed Commercial Artist, Publications Directorate, CSIR, with effect from Oct. 21, 1957.

* DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been appointed member of the *Development Council for Heavy Chemicals (Acids and Fertilizers)*, Union Ministry of Commerce & Industry.

* DR. S. HUSAIN ZAHEER has been nominated member of the Committee set up by the Union Ministry of Steel, Mines and Fuel to advise on matters relating to *Oil Exploration, Production, Refining, etc.*

* DR. S. HUSAIN ZAHEER has been nominated member of the *Joint Committee of the CSIR and the Indian Central Oilseeds Committee for Vegetable Oils Research.*

* DR. ATMA RAM, Director, CGCRI, Calcutta, has been nominated member of the *Expert Committee for the establishment of Optical Glass Plant*, Union Ministry of Commerce & Industry. Shri K. D. SHARMA, Asstt. Director, CGCRI, has been nominated alternate member.

* DR. K. S. G. DOSS, Deputy Director-in-charge, CECRI, Karaikudi, has been appointed member of the *Development Council for Heavy Chemicals (Alkalies)*, Union Ministry of Commerce & Industry.

* DR. K. S. G. DOSS has been nominated member of the *Electrotechnical Division Council* of the Indian Standards Institution. Dr. A. JOGARAO, Asstt. Director, CECRI, continues to be an alternate member.

* DR. B. R. NIJHAWAN, Director, NML, Jamshedpur, left on deputation for U.K. and U.S.A. on Oct. 12, 1957. He will attend the *Second World Metallurgical Congress* to be held at Chicago in the month of November. Dr. T. BANERJEE, Asstt. Director, NML, will exercise the powers of Director in the absence of Dr. Nijhawan.

* SHRI K. S. SANKARAN, Junior Scientific Officer, CRRI, New Delhi, who had been deputed to U.S.A. for training in Advanced Highway Engineering under the Joint Sponsorship of the TCM and the International Road Federation resumed duty on July 30, 1957.

* SHRI Y. C. GOKHALE, Junior Scientific Officer, CRRI, New Delhi on return from U.K. after completion of his training in Pavement Designs including Surface Characteristics, under Colombo Plan resumed duty on Sept. 25, 1957.

BRIEFS

TESTING OF CANCER PRODUCING AND cancer inhibiting substances has been in progress at the *Indian Cancer Research Centre*, Bombay, under a research scheme financed by the CSIR (CSIR News, Vol. 7, No. 2, p. 2).

Seven polycyclic hydrocarbons and their thioesters were tested for carcinogenic properties on Swiss strain mice. Of these, two compounds gave promising results. A sulphur analogue of chrysene, 6:12-dimethylbenzo-1:2b:4:5b'-dithionaphthene induced spindle cell sarcoma when administered by subcutaneous injections. Animals which received subcutaneously 3:4:9:10-dibenzpyrene developed tumors of the subcutis in three months. No reaction was observed when thionaphthene was tested by skin painting or continued subcutaneous injection; spleen and liver enlargements were, however, observed.

Two thiophene analogues of 3-desoxyequilin were tested for their physiological activity on ovariectomised female mice. Preliminary results showed that 3:4:2':3'-(1-keto-2'-methylcyclopentano)-1:2:3:4:4a:9b-hexahydrodibenzothiophene-5-dioxide (m.p. 162°C.) shows feeble estrogenic activity.

STUDIES ON THE STRUCTURAL chemistry of synthetic polymers in relation to their electrochemical behaviour have been in progress at the *University of Delhi*, under a research scheme financed by the CSIR.

Linear polymeric products obtained by condensing formaldehyde with phenol, o-cresol, p-cresol, resorcinol, aniline and o-toluidine under controlled conditions were suspended in polar liquids, reacted with acids/bases and examined for pH, specific conductivity and cathoretic velocity. The total number of acidic or basic groups present in a polymer was determined from the inflexions and breaks of potentiometric and conductometric titration curves. The values compare favourably with those calculated from the formulae of repeat units in polymers. The product of the quantity of acidic/basic groups and the formula weight of the repeat

unit gives the average molecular weight of the polymer. The ratios of molecular weight calculated by the electrometric method agree with those obtained from measurements of the intrinsic viscosities of polymer solutions.

CRYSTAL STRUCTURES OF FROZEN toluene and its solution at low temperature have been studied in the laboratories of the *Indian Association for the Cultivation of Science*, Calcutta, under a research scheme financed by the CSIR.

Toluene frozen at -180°C. (density, 1.061) possesses the orthorhombic structure, the unit cell containing four molecules. The crystal belongs to the space group C_{2v}^7 .

Frozen solutions of toluene in ethyl alcohol have an amorphous structure. The cybotactic groups of toluene molecules are broken up into small groups by alcohol molecules; the new line observed by previous workers in the Raman spectra of toluene-alcohol mixtures is due to the smaller groups, not to crystallites.

TAPIOCA MACARONI PRODUCTS IN different shapes (rice, tubes, shells, etc.) have been produced on an experimental Paste Goods Plant (capacity, 2 cwt. per hr.) installed at the CFTRI, Mysore from compositions based on tapioca flour, groundnut flour, wheat semolin, and wheat flour. Extension trials have been carried out on the cooking quality and consumer acceptance of the products. Steaming improves the cooking quality and storage life of macaroni tubes and hardens the texture. Ready-to-serve dishes, sweet or savoury, have been prepared from the steamed product. Demonstrations for popularising the product in Kerala State are being conducted.

A vitamin-enriched and mineral fortified macaroni containing 18 per cent protein has been produced by a process developed at the Institute.

THE FOLLOWING HAVE BEEN AWARDED CSIR Junior Fellowship for research under the schemes noted against their names:

1. SHRI SANTOSH KUMAR DEB—Modification of jute fibre properties by esterification or etherification (Indian Jute Mills Association Research Institute, Calcutta).

2. SHRI D. P. BHATTACHARYYA—Development of jute/resins (natural and synthetic) combinations (Indian Jute Mills Association Research Institute, Calcutta).

THE CSIR RESEARCH SCHEME: Mechanism of reaction between cellulose fibre and resins from urea formaldehyde (sanctioned to be undertaken at the Ahmedabad Textile Industry's Research Association, Ahmedabad), has been terminated with effect from Oct. 24, 1957.

CSIR PATENTS

(APPLICATIONS FILED)

61320: Improvements in or relating to the preparation of active carbon—K. K. Roy, N. G. Basak & A. Lahiri, CFRI, Jealgora.

The invention relates to an improvement on the Indian patent No. 48385 on preparation of active carbon from coal and lignite. The improved technique provides a better control of the process and gives product of uniform quality.

61585: A process for the manufacture of an ammonium phosphate-sulphate fertiliser—J. Gupta, K. Seshadri, J. Lobo & M. N. Rao, NCL, Poona.

Ferruginous rock phosphates such as found at Singhbhum deposits have been utilized for the manufacture of a commercial ammonium phosphate fertiliser which may contain ammonium and calcium sulphates but no iron.

61645: A new process for the manufacture of precast doubly curved shell elements for roofs, floors and panel walls—G. S. Ramaswamy & S. M. K. Chetty, CBRI, Roorkee.

Precast doubly-curved shell units of a size that is readily handled and cast in a simple manner can be produced.

The unit has all the inherent advantages of shell structures like saving in weight and cost; incombustibility, security against explosion, bombardment and earthquakes. Being doubly curved, the surface is non-developable and possesses greater resistance to buckling than a shell curved only in one direction. The shell and the grid can be cast simultaneously with all the consequent advantages of monolithic construction.

(Contd. on p. 4, col. 1.)

National Laboratories

National Chemical Laboratory, Poona

Vitamin C from Sorbitol

Vitamin C is now being prepared from sorbitol by a four step process worked out in the Laboratory. A pilot plant study for vitamin C production on a 10 lb. scale has been undertaken.

Kamala Seed Oil

On the basis of fractionations of kamala seed oil by various solvents and chromatographic and low temperature separations, it has been concluded that the oil consists mostly of complex triglycerides formed by the condensation of carboxyl groups of the constituent fatty acids both with the hydroxyl groups of glycerine and kamolenic acid. The residual portion of the oil, not exceeding 12 per cent, consists of simple triglycerides of the component fatty acids.

National Metallurgical Laboratory, Jamshedpur

Vanadium Pentoxide

Vanadiferous magnetite samples of Bihar are being studied for the recovery of vanadium pentoxide. It has been found possible to recover about 76 per cent of the vanadium from the ore by suitable treatment. Further work is in progress.

Desulphurization of Pig Iron

Further studies (CSIR News, Vol 7, No. 10, p. 3) carried out at the Laboratory have established the efficacy of using fusite (fused soda ash) in desulphurizing off-graded pig iron in basic lined ladles. The efficiency of desulphurization depends on the initial sulphur content of the iron. Desulphurization in acid lined ladles is erratic due to the interaction of iron and/or manganese sulphide from the acid lining. The physical properties of iron improve as a result of fusite treatment.

Central Leather Research Institute, Madras

Dressing of Kips and Skins

A process for the dressing of inferior quality E.I. tanned kips and bark-tanned skins, using basic aluminium sulphate as a substitute

for chrome, has been developed. A variety of leathers for use as upholstery, shoe upper, insoles, garment leathers, sports good leather, sambars and suedes have been produced. The process for producing sambar, suedes and linings has been demonstrated for the benefit of tanners.

A method for the preparation of basic aluminium sulphate has been developed and patented.

Central Drug Research Institute, Lucknow

Skin Fungi

A survey of human skin fungi from 173 patients has shown that *Trichophyton rubrum* is the most common species of dermatophyte in Lucknow. Yeast-like fungi rank next in importance. A detailed study of the isolates of prevalent species of dermatophyte is in progress.

The effect of 21 sulphones, 3 sulfoxides and 7 sulphides on the growth of *T. rubrum* has been studied under *in vitro* condition; diphenyl diamino sulphone, Nycil and undecylenic acid were used as standards for comparison. A copper chelate of sulphone hydrazide, 2 sulfoxides and 3 sulphides inhibited the growth of the fungus at 1 per cent concentration. The sulphides were superior to Nycil, but less efficient than undecylenic acid. None of the sulphides were fungicidal.

RESEARCH PAPERS

THE NATURE OF REACTIVE GROUPS IN COAL—M. S. Iyengar & A. Lahiri, CFRI, Jealgora. *Fuel*, **36** (1957), 236-97.

The heats of wetting in methanol, water and chlorobenzene for coals of different rank are compared with their corresponding hydrogen bonding energies as calculated from the reactive oxygen groups. The assumption of $-\text{OH} \dots \text{O}=\text{C}$ bonding in coals of carbon content below 85 per cent gives good agreement between the two values

FURTHER STUDIES ON THE REACTIVE OXYGEN GROUPS IN COAL—B. K. Mazumdar, P. H. Bhangale & A. Lahiri, CFRI, Jealgora. *Fuel*, **36** (1957), 307-12.

Estimation of hydroxyl groups in different ranks of coal and vitrain (C=65 to 91) has been done by acetylation. In lower ranks of coal (C<85) a constant proportion of oxygen occurs as hydroxyl form (43 per cent in coals and 53 per cent in vitrains). It is suggested that higher hydroxyl contents in vitrains account for their more pronounced hydrophilic character. The probable significance of the results to the mechanism of coalification is also indicated.

SURFACE AREA OF COAL AND ITS CORRELATION WITH OTHER PROPERTIES—K. A. Kini, CFRI, Jealgora. *J. Coll. Min. Met.*, Annu. No. 1957, 25-28.

The methods employed for the measurement of the surface area of coals are discussed and attention is drawn to the discrepancy in values for surface area obtained by different techniques. The importance of surface area measurement in the understanding of the industrial behaviour of coals is also discussed.

MODIFIED PREPARATION OF PSEUDO-SAPOGENINS—D. Chakravarti, R. N. Chakravarti & M. N. Mitra, School of Tropical Medicine, Calcutta. *Nature, Lond.*, **179** (1957), 1188-89.

A new method for the conversion of diosgenin into pseudo-diosgenin utilizing triacetin is described. The triacetin used in the process may be replaced by other similar high boiling solvents.

SCREENED INDICATOR FOR COMPLEXOMETRIC TITRATION OF THORIUM—M. R. Verma & S. D. Paul, NPL, New Delhi, *Curr. Sci.*, **26** (1957), 178-79.

A mixture of Alizarin S and xylene cyanole F. F. gives a sharp end point in dilute solutions of thorium unlike the conventional indicator Alizarin S. The colour change is from green to pink-violet through a grey tone.

BUCKLING BEHAVIOUR OF THE COMPRESSION FLANGE OF A WIDE-FLANGED BEAM—S. Krishnan & S. G. Tewari, NPL, New Delhi. *J. aero. Soc.*, **9** (2) (1957), 15-27.

Assuming a solution for the stress distribution, the buckling normal stress for the compression flange of a wide-flanged beam subjected to uniformly distributed load has been determined and described in the paper.

PATENTS

(Contd. from p. 2, col. 3)

61772: A method for the isolation of psoralen-isopsoralen mixture from the seeds of *Psoralea corylifolia* (Babchi)—S. Bhattacharji & M. L. Dhar, CDRI, Lucknow.

Psoralen-isopsoralen mixture from the dry seeds has been isolated in 1.1 per cent yield. Psoralen is used in the treatment of leucoderma.

61773: Improvements in or relating to the refining and utilization of cottonseed oil—T. R. Seshadri & Kailash Chander, Delhi University, Delhi.

The process relates to the refining of semi-refined cottonseed oil, hydrogenated cottonseed oil and cottonseed oil containing free or fixed gossypol. The process also increases the scope of utilization of cottonseed oil and cottonseed oil soap stock.

61774: A process for the manufacture of magnetic oxide of iron—K. C. Srivastava & O. P. Kulsreshtha, NPL, New Delhi.

Magnetic oxide obtained by the invented process is chemically pure and free from all impurities generally present in the magnetic oxide found in nature.

(APPLICATIONS ACCEPTED)

56817: Improvements in or relating to compensators for transformers—P. V. Rao, Indian Institute of Science, Bangalore.

57267: An improved process for the treatment of bamboo to further its utilization in the manufacture of pulp, paper, board or the like—G. M. Vyas, R. V. Bhat & K. A. Chowdhury, Forest Research Institute, Dehra Dun.

57268: A process for the preservation of sweet toddy (neera) obtained from palm trees—P. S. Sarma, University of Madras, Madras.

(APPLICATIONS SEALED)

54867: A process for the manufacture of nicotine sulphate from tobacco and tobacco wastes—H. C. Bijawat, R. Razdan & G. V. Potnis, NCL, Poona.

54960: A process for the production of phthalic anhydride—V. K. Mathur, C. S. B. Nair, A. N. Basu, A. Lahiri & (Late) J. N. Bhatnagar, CFRI, Jealgora.

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Last date for the receipt of applications, Nov. 19, 1957.

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State Awards for CSIR Publications

State awards for various categories of entries in the competition for excellence in printing and designing, conducted by the Union Ministry of Information and Broadcasting, were presented by the President, Dr. Rajendra Prasad on Nov. 21, 1957.

The following publications of the Council of Scientific & Industrial Research have been awarded prizes:

1. *Glossary of Indian Medicinal Plants*, printed at the Catholic Press, Ranchi—First Prize for "Books on Indian Made Paper".
2. *The Wealth of India*, Vol. IV, printed at the Govt. of India Press, New Delhi—Certificate of Merit for "Books on Indian Made Paper".

Bhatnagar Memorial Award for Scientific Research

An annual award of Rs. 10,000 for outstanding contribution in scientific research (including engineering and technology) has been instituted by the Council of Scientific & Industrial Research.

The award, named "Shanti Swarup Bhatnagar Memorial Award for Scientific Research", will come into effect from the current year and will be made to the Indian research worker whose contribution in the field of research during the preceding five years is adjudged the best.

The recipient of the prize will be invited to speak on the subject in which he has made notable contributions and his address will be

published by the Council of Scientific & Industrial Research.

Directors' Conference

A two-day conference of the Directors of National Laboratories was held at the National Physical Laboratory, New Delhi on Nov. 16-17, 1957. The Prime Minister, Shri Jawaharlal Nehru, inaugurated the conference.

The Prime Minister laid stress on the role to be played by scientists in the present context of our national development. While it was necessary to continue fundamental research the scientists must bear in mind the immediate needs of the country. They should help in developing the internal resources of the country and formulate programmes of research in relation to the actual requirements of the country.

PERSONAL

* PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, returned to India on Nov. 11, 1957 from Moscow, where he attended the special session of the U.S.S.R. Academy of Sciences organized in connection with the Fortieth Anniversary celebration of the Great October Revolution.

* DR. B. R. MARATHE has been appointed, on promotion, Research Scientific Officer Grade II, NPL, New Delhi.

* SHRI P. N. SUNDARAM has been appointed, on promotion, Junior Scientific Officer, NPL, New Delhi.

* DR. J. S. AHLUWALIA has been appointed on promotion, Research Engineer, NPL, New Delhi.

* SHRI S. C. SHARMA has been appointed, on promotion, Junior Documentation Officer, NPL, New Delhi.

* SHRI Y. S. LEWIS has been appointed, on promotion, Junior Scientific Officer, CFTRI, Mysore, with effect from Nov. 2, 1957.

* SHRI N. SUBRAHMANYAN has been appointed, on promotion, Junior Scientific Officer, CFTRI, Mysore, with effect from Nov. 4, 1957.

* SHRI P. R. GANDHI has been appointed Junior Scientific Officer (Cost and Productivity Division), CBRI, Roorkee.

(Contd. on p. 4, col. 3)



NPL, NEW DELHI—The Prime Minister inaugurated the conference of Directors of National Laboratories on Nov. 16, 1957.

SPONSORED RESEARCH

STUDIES ON THE ULTRASONIC absorption in liquids are in progress in the University of Allahabad, under a research scheme financed by the CSIR.

Absorption studies in manganese sulphate solutions (at frequencies ranging from 2 to 6 Mc/s.) have shown that the relaxation frequency at 0.1 M concentration is about 3 Mc/s. The relaxation frequency increases with rise in the concentration of solution from 0.0025 to 0.2 M; it is constant in the region 0.02 to 0.1 M and increases slightly above 0.1 M.

Ultrasonic absorption in water-dioxane mixtures of dielectric constant equal to 56.5 and 48.0 e.s.u. at 0.0025 to 0.2 M concentrations of manganese sulphate increases considerably with the decrease in the dielectric constant. This result, which supports the dissociation hypothesis, has been confirmed by the study of the variation of specific rate of association (K_2) with the change in the reciprocal of the dielectric constant.

'LAMPBRUSH' CHROMOSOMES IN *Varanus flavescens* and *Riopa punctata* have been studied at the University of Allahabad under a research scheme financed by the CSIR. Lampbrush fibres have been observed on pachytene, diplotene, and diakinetin chromosomes, but not on pre-synaptic chromosomes.

The diploid chromosome complements in the males of *V. flavescens* and *R. punctata* have also been studied. The spermatogonial metaphase plates of *V. flavescens* show 16 macro- and 24 micro-chromosomes; in *R. punctata*, 20 macro- and 12 micro-chromosomes have been observed.

THE ROLE OF ENZYMES IN THE toxic action of cobra venom is being investigated at the Indian Cancer Research Centre, Bombay, under a CSIR research scheme.

In vitro studies on the influence of heated cobra venom on carbohydrate metabolism of brain show that lecithinase (of cobra venom) brings about pronounced inhibitory action on mitochondrial enzymes, presumably by the destruction of phospholipoidal structures in mitochondria. The endogenous meta-

bolism of brain is considerably decreased in animals injected with cobra venom.

THE FOLLOWING HAVE BEEN AWARDED CSIR Fellowship for research in the schemes noted against their names:

Senior Fellowship

1. SHRI G. S. S. SARMA — Development of an aircraft air speed indicator (Madras Institute of Technology, Madras).

2. SHRI V. V. R. VARADACHARI — Physical Oceanography (Andhra University, Waltair).

3. SHRI SAROJ KANTI MAZUMDAR — Biochemical studies on the action of Mycobacillin on skin pathogens both in vitro and in vivo (University College of Science & Technology, Calcutta).

Junior Fellowship

1. SHRI PRITAM SINGH REHAL — Utilization of lignin and lignocellulosic wastes (Forest Research Institute, Dehra Dun).

2. SHRI D. RAMACHANDRA RAO — Emission spectra of halogens in the presence of argon and halogen magnetic resonance, using super high resolution, nuclear magnetic resonance, etc. (Muslim University, Aligarh).

BRIEFS

THE TWO-DAY (OCT. 12-13, 1957) symposium on Utilization of Indian Medicinal Plants organised by the Pharmaceuticals and Drugs Research Committee at the Central Drug Research Institute, Lucknow, was presided over by Maj. Gen. S. S. Sokhey.

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, who inaugurated the symposium, announced the decision of the Union Government to establish a Central Indian Medicinal Plants Organisation (CIMPO). He felt that the discussion at the symposium on Indian medicinal plants and on the preparation of drugs and medicines would provide useful data for further investigations under the CIMPO.

Dr. M. M. Das, Deputy Minister for Scientific Research hoped that the symposium would help in formulating a plan for the development of indigenous medicinal resources.

Welcoming the delegates and scientists, Dr. B. Mukerji, Director, CDRI, recounted the work done on medicinal plants in the Central Drug Research Institute and the National Botanic Gardens.

Col. R. N. Chopra spoke on the utilization of Indian medicinal, poisonous, insecticidal and aromatic plants.

Sixty papers dealing with the botany, chemistry, pharmacognosy, pharmacology, pharmaceuticals and therapeutical uses of Indian medicinal plants were presented and discussed at the symposium.

A SIX-WEEK ADVANCED COURSE OF training in Scientific Glass Blowing has been organised by the National Physical Laboratory in collaboration with the Unesco South Asia Science Cooperation Office. The course which commenced on Nov. 6, 1957, was inaugurated by Dr. K. S. Krishnan, Director, NPL. Trainees from Burma, Ceylon, India and Pakistan are attending the course.

The course covers training in design and fabrication, including high vacuum techniques, metal-to-glass seals and use of glass lathe.

The course is being jointly conducted by Mr. J. H. Burrow of H. H. Wills Physical Laboratory, University of Bristol, England, Mr. P. Bieunais, Unesco Expert in Glass Blowing in Rangoon and Mr. F. Kiss, In-charge, Glass Blowing Section, NPL, New Delhi.

THE FOUNDATION DAY OF THE Regional Research Laboratory, Hyderabad, was celebrated on Nov. 9, 1957. The occasion was availed of for acquainting the public with the progress of scientific research in the Laboratory and Nov. 9-10 were declared 'open days'. Charts and samples of raw materials and processed products were on display; visitors were taken round the laboratories and the scientific and economic aspects of the projects under study were explained.

Dr. S. Husain Zaheer addressed a Press Conference on Nov. 9.

National Laboratories

National Chemical Laboratory, Poona

Titania from Bauxite Sludge

The production of titanium tetrachloride from bauxite sludge (a waste product of the aluminium industry) is under investigation. Leaching of the sludge (titania, 25 per cent and iron oxide, 15 per cent) with dilute hydrochloric acid at room temperature gives a product containing 40 per cent titania and less than 10 per cent iron oxide. Briquetting of the upgraded sludge with powdered charcoal and chlorination at 500°C. gives titanium tetrachloride containing but small amounts of ferric chloride. White rutile-type titania (superior to anatase-type) is obtained by hydrolysing the tetrachloride, the hydrochloric acid obtained can be recycled for upgrading the bauxite sludge.

National Metallurgical Laboratory, Jamshedpur

Plastic Chrome Ore

Plastic chrome ore used in soda recovery furnaces in paper mills is at present imported. A suitable substitute based on indigenous materials, which compares favourably with the imported product has been developed in the Laboratory.

Stainless Steel Cladding

A process for cladding mild steel plate with 18:8-stainless steel by hot rolling has been developed. Two stainless steel plates are sandwiched between two mild steel plates with side packings, the block welded on all sides, and hot-rolled at 1150°C. The separation of the clad units is rendered possible by the use of a separating medium between the steel plates. Further work is in progress.

Salem Magnesite

Magnesite required for use in the manufacture of basic refractories should not contain more than 1.5 per cent silica. Magnesite from Salem contains more silica (2.85 per cent) than that specified and the possibility of reducing the silica content and so rendering it suitable for use in refractories has been investigated at the Laboratory. Petrological examination showed that quartz was the principal

gangue material in the sample. Heavy media separation at sp. gr. 2.56, followed by flotation of rejects (after grinding) gave a product assaying 1.28 per cent SiO_2 with an overall recovery of 71.8 per cent.

Reduction of Magnetite Ore

Investigations on Salem magnetite ore, at the Laboratory showed that its reduction in the blast furnace is slow and that not more than 60 per cent of the ore is reduced. If, however, the ore is first concentrated and then subjected to reduction, as much as 91 per cent of it is reduced within 70 minutes; the rate of reduction of concentrated ore is comparable to that of high grade ores.

Central Glass & Ceramic Research Institute, Calcutta

Manganese Glass

Measurements on optical absorption and paramagnetic susceptibility of manganese glasses show that the position and intensity of absorption bands (attributable to manganous and manganic ions) change in a regular fashion with the changing composition of glass. The effects of melting time, temperature, and glass composition on the oxidation-reduction equilibrium of manganese have been investigated.

Central Food Technological Research Institute, Mysore

Stability of Vegetable Shortening

The effect of vanillin on the stability of vegetable shortening (m.p. 37°C.) has been studied under accelerated conditions of storage at $100^\circ \pm 2^\circ\text{C}$. by chemical and organoleptic tests. Vanillin possesses antioxidant properties, but it interferes in the Kreis test and in the determination of peroxide value by iodimetric methods.

Central Leather Research Institute, Madras

Tetramine Complexes as Tanning Agents

Hexamethylenetetramine complexes of phenol, resorcinol, catechol and pyrogallol have been prepared and tested for tanning action under various conditions. All the complexes, excepting the complex

with phenol, possess good tanning properties, those of resorcinol hexamethylenetetramine being the best. Tanning with this complex is effective below pH 7.

Hexamethylenetetramine acts as a donor of formaldehyde under the conditions of tanning. The mechanism of tanning with this complex is under investigation.

Regional Research Laboratory, Hyderabad

White Cement from Felspar

A process for the production of white cement from felspar has been worked out. The process consists in heating a mixture of potash felspar, limestone and gypsum at 900°C., recovering potassium sulphate by leaching the treated mass with water, and firing the sludge at 1,400°C. to give a cement clinker. The cement possesses all the properties of Portland cement. The cost of production has been estimated to be less than Rs. 150 per ton. A grant of Rs. 40,000 has been made by the National Research Development Corporation of India for putting up a pilot plant for the production of white cement by this process.

CSIR PATENTS

(APPLICATIONS SEALED)

53390: An improved method for the production of manganese sulphate from manganese ores and its application for the regeneration of the spent electrolytic manganese sulphate bath—P. P. Bhatnagar & T. Banerjee, NML, Jamshedpur.

55453: Improvements relating to the manufacture of copper ruby glass articles—Atma Ram, S. N. Prasad & V. K. Vaish, CGCRI, Calcutta.

55559: Modification of a process for the utilization of mica and micaceous substances for the manufacture of heat insulating bricks, tiles or like products—Atma Ram & S. B. Roy, CGCRI, Calcutta.

56251: A curing agent for raw hides and skins—S. N. Sen, S. C. Nandy & (Late) B. M. Das, CLRI, Madras.

56582: A process for the manufacture of light constructional material such as hard boards, laminates, blocks or the like—C. S. Bhaskaran Nair, A. N. Basu & A. Lahiri, CFRI, Jealgora.

RESEARCH PAPERS

EXPERIMENTS ON COAL SAMPLING:

Pt. I—METHODS OF REDUCTION OF GROSS SAMPLES INTO LABORATORY SAMPLES AND ERRORS INVOLVED THEREIN: A STATISTICAL APPRAISAL—A. Ghosal & N. C. Sinha, CFRI, Jealgora. *Indian Stat. Qulty. Cont. Bull.*, 4 (1957), 3-22.

A statistical study of errors due to preparation of the laboratory samples of coal from the gross sample by different methods and also due to analysis has been reported. Results of four different methods (three methods suggested by the authors and an I.S.I. method) on samples of steam coal and small coal have been recorded. The statistical design of the experiments is such that errors at different stages could easily be assessed from appropriate analysis of variance tables. The authors' methods are found to be less time consuming and lead to less errors than the I.S.I. method.

EXPERIMENTS ON COAL SAMPLING:

Pt. II—ERRORS DUE TO REDUCTION AND ANALYSIS VIS-A-VIS ERRORS DUE TO SAMPLING—A. Ghosal, CFRI, Jealgora. *Indian Stat. Qulty. Cont. Bull.*, 4 (1957), 23-39.

A comparison of errors in sampling coals (steam, slack and rubble) from two sources, (i) while drawing samples, (ii) during reduction of the gross sample to laboratory samples and analysis of variance of results obtained from properly statistically designed experiments form the subject of study of the paper. The errors due to reduction and analysis are significantly less than the errors due to the drawing of samples.

METAL PROTEIN INTERACTIONS IN BUFFER SOLUTIONS: Pt. I—AN ELECTROPHORETIC STUDY OF THE INTERACTION OF COPPER, ZINC, CADMIUM AND COBALT IONS WITH NATIVE AND MODIFIED BOVINE SERUM ALBUMINS—Hira Lal & M. S. Narasinga Rao, NCL, Poona. *J. Amer. chem. Soc.*, 79 (1957), 3050.

General concepts governing the interpretation of metal-protein interactions in buffer solutions have been outlined. It has been shown that the binding data should be supplemented by mobility measurements if the interactions are to be treated as a competition between the metal and hydrogen ions for

combining with a given set of sites on the protein molecule. The existing data for the binding of cupric and cobaltous ions by bovine serum albumin in an acetate buffer of pH 6.5 and ionic strength 0.20 and the corresponding mobility data reported in the present communication have been analyzed.

SATELLITE-ELECTRON THEORY OF FERROMAGNETISM, ANTIFERRO-MAGNETISM AND RELATED PHENOMENA—Lakshbir Singh, NCL, Poona. *Naturwissenschaften*, 44 (1957), 417.

It is assumed that the orbit of the free 3d electron in the transition metal ions undergoes a distortion due to the repulsion from electron clouds of the surrounding ions. This denting reaches a maximum limit in a contracting lattice as the magnetic substance is cooled down to its Curie point. The orbit of the free 3d electron becomes untenable at this stage and further cooling results in the ejection of this electron into two types of satellite orbits formed round the parent cation through the annular space between the surrounding ions. Equatorial satellite orbits of two neighbouring cations couple with each other and cause antiferromagnetism. Smaller latitudinal satellite orbits remain uncoupled and cause ferromagnetism.

PERSONAL

(Contd. from p. 1, col. 3)

* DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been awarded the Dr. K. G. Naik Gold Medal by the Syndicate of the Maharaja Sayaji Rao University of Baroda for the best contribution made to published research in the field of chemistry during the last five years.

* DR. K. S. G. Doss, Deputy Director-in-charge, CECRI, Karai-kudi, has been awarded the Rai Saheb Nanak Chand Kapur Sugar Industry Cup and the Ajudhya Prasad Prize, jointly with Shri N. C. Varma, by the Sugar Technologists' Association of India for their research paper: Colour Standardization of White Consumption Sugars.

* DR. S. M. DAS GUPTA, Regional Liaison Officer, Calcutta Region, has been elected member of the Indian Institute of Chemical Engineers.

* SHRI P. R. AHUJA, Director (Hydrology & Statistics), Central Water and Power Commission, New Delhi, has been nominated member of the CSIR Advisory Committee of Rain and Cloud Physics Research Unit.

Burmah-Shell and Assam Oil Company Scholarships

(Advertisement No. 73)

Applications are invited for Burmah Shell and Assam Oil Company Scholarships tenable in Commonwealth countries for a period of two years each. The awards will be made to the best qualified candidates for higher training in any of the following subjects.

Burmah Shell Scholarships

1. Mining Geology or Mining Engineering
2. Metallurgy (Steel Production)
3. Machine Design (Mechanical)

Assam Oil Company Scholarships

1. Production Engineering
2. Foundry Practice
3. Electronic Instrumentation
4. Chemical Engineering
5. Petroleum Technology
6. Fuel and Gas Engineering

7. Mine Machinery Manufacture
8. Industrial Management

QUALIFICATIONS: The minimum qualification required is a first class degree in science, engineering or technology in a field related to the subject of training. Applicants should ordinarily be between 20 and 30 years of age.

Scholars will receive a stipend of £382 (or \$1500 in Canada) per annum plus certain other allowances. Further particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi. Application forms duly completed together with a application fee of Rs. 7.50 (Rs. 1.87 for scheduled castes/tribes) in the form of a crossed Indian postal order in favour of the Secretary, CSIR, should reach him not later than Dec. 21, 1957.

Symposium

A symposium on *Leather Auxiliaries* is proposed to be held at the Central Leather Research Institute, Madras, towards the end of February 1958.

The symposium will provide a meeting ground for tanners, manufacturers and dealers in leather goods to discuss problems pertaining to the scope for manufacturing leather auxiliaries in the country.

The following aspects of the subject will be discussed:

1. Curing, soaking and deliming agents
2. Bating, puering and pickling materials
3. Depilants
4. Natural tanning materials: tanning extracts and modifiers
5. Mineral and other tanning agents: syntans, oils, aldehydes, combination and miscellaneous tannages
6. Neutralising, stripping, clearing and bleaching agents
7. Surface active agents
8. Oils, fats, waxes and water-proofing materials
9. Finishing materials: mordants, dyestuffs, pigments, finishes and lacquer
10. Dressing materials
11. Filling agents, adulterants and substitutes
12. Adhesives
13. Disinfectants and fungicides
14. Evaluation, testing, standardisation and marketing

An exhibition of leathers, leather goods and leather auxiliaries will be organized. The Institute will

have an 'Open House' for a period of one week to enable participants and visitors to see the work of the Institute. Arrangements to visit tanneries in and around Madras city will be made for the visitors. Those desirous of participating in the symposium may fill forms obtainable from the Institute and send them to the Assistant Director-in-charge, to reach him by Dec. 30, 1957.

Personal

*SHRI S. S. BHATNAGAR has been appointed Senior Scientific Officer: Grade I, NML, Jamshedpur, with effect from Nov. 26, 1957.

*SHRI G. NARASIMHAN has been appointed Senior Scientific Officer: Grade II, NCL, Poona, with effect from Nov. 25, 1957.

*SHRI E. D. JAYARAM has been appointed Law Officer, CSIR Secretariat, New Delhi, with effect from Dec. 11, 1957.

*DR. M. GOSWAMI has been appointed, on promotion, Junior Scientific Officer, NCL, Poona, with effect from Nov. 25, 1957.

*DR. U. G. NAYAK has been appointed, on promotion, Junior Scientific Officer, NCL, Poona, with effect from Nov. 25, 1957.

*SHRI O. P. KAPUR has been appointed Junior Scientific Officer, CFTRI, Mysore, with effect from Dec. 9, 1957.

*DR. P. R. BHANDARI has been appointed, P.A. (Tech.) to the Director, CDRI, Lucknow, with effect from Nov. 29, 1957.

*DR. K. S. VARADAN has been appointed, on promotion, Junior Scientific Officer, CDRI, Lucknow, with effect from Nov. 29, 1957.

*DR. A. C. ROY has been appointed, on promotion, Junior Scientific Officer, CDRI, Lucknow, with effect from Nov. 29, 1957.

*SHRI S. N. GHATAK has been appointed, on promotion, Junior Scientific Officer, CDRI, Lucknow, with effect from Nov. 29, 1957.

*SHRI K. L. ARORA has been appointed, on promotion, Junior Scientific Officer, CDRI, Lucknow, with effect from Nov. 29, 1957.

*SHRI M. S. EKBOTE, Project Officer, Utilisation of Wind Power Scheme, New Delhi, relinquished charge of his post with effect from Nov. 24, 1957.

*LT.-GEN. H. WILLIAMS, Director, CBRI, Roorkee, has been nominated Chairman, *Building Research Committee* with effect from Dec. 14, 1957.

*SHRI M. R. VERMA, Head of the Division of Analytical Chemistry, NPL, New Delhi, has been nominated member of the *Board for Assessment of Technical and Professional Qualifications*, Union Ministry of Education & Scientific Research.

*SHRI T. V. RAMAMURTI, Senior Scientific Officer, NPL, New Delhi, has been nominated member of the *Panel for Electronics and Wireless Equipment*, Union Ministry of Commerce & Industry.

*DR. M. L. KHANNA, Senior Scientific Officer, NPL, New Delhi, has been nominated CSIR representative on the *Panel for Alcoholometric Tables*, Indian Standards Institution.

*DR. B. R. NIJHAWAN, Director, NML, Jamshedpur, who had been on deputation to U.K. and U.S.A. resumed duty with effect from Nov. 15, 1957.

*SHRI PRATAP SINGH, Junior Scientific Assistant, NBG, Lucknow, proceeded to U.S.S.R. on Dec. 14, 1957 for higher studies in medicinal plants at the *Union Research Institute of Medicinal Plants*, Moscow, under the USSR Government Scholarship programme for 1957-58.

DR. HARI MOHAN, Junior Research Assistant, CSIR scheme: *Investigation of the spectra of molecules in the visible and ultraviolet regions*, has been admitted to the D.Phil. degree of the Allahabad University.

Sponsored Research

THE ANNUAL REPORT (1956-57) of the Rain & Cloud Physics Research Unit, NPL, New Delhi records the overall progress of investigations during the year.

A preliminary study of the behaviour of different condensation nuclei—silver iodide, ammonium chloride, potassium bromide, potassium iodide, sodium chloride, calcium chloride, acetone—has been made. The particle size of the cloud formed on calcium chloride nuclei (produced by burning calcium chloride in a non-luminous bunsen flame) is of the order of 2 microns only, and the technique of vapourising calcium chloride to initiate rain drop growth by collision cum coalescence is unlikely to succeed.

A filter paper technique for measuring the diameter of rain drops has been perfected. The values obtained by using this technique agree closely with those determined by the *Oceanographic Institute, U.S.A.* Sizes of rain drops occurring at Delhi on different occasions of rainfall, such as thunder storm rain, typical monsoon in North India, steady continuous rain of the frontal type, etc. have also been measured by this technique.

On the basis of theoretical study of expected size distribution of rain drops and intensity of precipitation at various phases of rain showers from large cumulus, conclusions have been reached which are in general agreement with those observed in actual rain showers. The study provides some corroboration to the present accepted theory of coalescence growth of rain drops in 'warm' clouds, and of the salt-nucleus hypothesis of rain formation in such clouds.

Preliminary measurements of size distribution of cloud droplets at Khandala (Western Ghats) have been made by causing drifting cloud particles to impinge on a microslide coated with a thin uniform layer of magnesium oxide.

It has been found that spraying dilute salt solution from the ground with the help of power sprayers, for 8 days resulted in the occurrence of rain in the neighbourhood of Delhi on five

days. Systematic seeding trials based on this method have been proposed; a network of 30 rain gauges, within 15 miles around Delhi, will be set up for this purpose.

A technique for estimating the intensity of vertical currents in and around a convective cloud field—an important basic parameter determining the final sizes attained by rain drops—has been developed in collaboration with the Radio-sonde Laboratory of the India Meteorological Department. Trial measurements have been made on more than a dozen occasions.

THE NATURE AND MODE OF ACTION of goitrogens, isolated from groundnut, cashewnut, almond and arecanut, are under study at the Department of Biochemistry, University of Madras, under a research scheme sponsored by the CSIR.

The goitrogen extracted from the red seed-coat of groundnut has been identified as an anthocyanin, arachidoside. When fed to rats, it produces a marked increase in thyroid weights. Supplementation of arachidoside with small amounts of iodide brought about a partial reversal of the goitrogenic condition. Histological examination of thyroid tissues of rats, to which arachidoside had been administered, revealed enlarged colloid spaces. The follicle size in the thyroid glands of rats, which had received iodide along with arachidoside, was nearly the same as in the normal tissue, indicating a reversal of the goitrogenic condition. The results of studies with radio-active iodine suggest that certain phenolic metabolites of arachidoside preferentially get iodinated in the thyroid tissue and consequently interfere with the biosynthesis of thyroid hormone.

A glycoside, anacardioside, has been isolated from the red papery covering of cashewnuts (*Anacardium occidentale*). Administration of anacardioside to experimental rats produces goitre, which is partially reversed by the addition of iodide. A study of the distribution of radio-active iodine in the thyroid gland of rats show that anacardioside acts in a manner similar to arachidoside.

The mode of goitrogenic action of a flavanol isolated from almonds and of tannins isolated from arecanut was investigated using radio-active iodine. The compounds inhibited the organic iodine binding capacity of surviving thyroid tissue slices. The iodo-derivatives of pigments, even at twice the concentration of the uniodinated analogues, did not inhibit the iodine uptake of thyroid slices to any significant extent. The finding was confirmed by studying the influence of the pigments on the tyrosine-iodinase system, using radio-active iodine.

Briefs

THE Associateship Course in Fruit Technology, conducted by the Central Food Technological Research Institute, Mysore, has been recognised as equivalent to M.Sc. (Agric.) course of the Poona University.

THE FOLLOWING HAVE BEEN AWARDED CSIR fellowships for research in the schemes noted against their names:

Senior Fellowship:

1. SHRI BRIJ GOPAL SHARMA — Polyamide resins from vegetable oils and ethylene dichloride (Shri Ram Institute for Industrial Research, Delhi).

Junior Fellowships:

1. SHRI N. VENKATESWARA RAO — A study of the reactive groups of collagen by desorption technique (Loyola College, Madras).

2. SHRI P. R. KRISHNAN — Studies in sulphate complexes in solution between the transitional divalent and univalent metal sulphate, etc. (Lucknow University, Lucknow).

3. SHRI N. RAJAGOPALAN — Studies in addition polymerisation (Lucknow University, Lucknow).

4. SHRI RAMESH CHANDRA RASTOGI — Determination of molecular weight of addition polymers (Lucknow University, Lucknow).

THE FOLLOWING RESEARCH SCHEMES at the Ahmedabad Textile Industries' Research Association have been terminated with effect from Dec. 11, 1957:

1. Studies on the relation between molecular orientation and physical properties of mercerized cotton.

2. Synthesis of adhesives from indigenous sources for bonded web fabrics.

National Laboratories

Central Drug Research Institute, Lucknow

Capsicum and Peptic Ulceration

The significance of the mucous barrier in the prevention of histamine-induced ulceration has been investigated at the Institute. Mucous production is stimulated in guinea pigs by the use of capsicum as an irritant. The greater the production of mucous, the less the degree of ulceration. The mucous also protects mucosa and sub-mucosa from inflammatory reaction. The higher the mucin content, the lower the free acidity, and a significant negative correlation exists between mucin content and acidity. It has been suggested that mucin neutralises the acid gastric juice, adheres to the surface of the mucosa, and forms a barrier against peptic ulceration. Capsicum in small doses, for a short time, does not cause any mucosal haemorrhage or ulceration or even depletion of epithelial cells. The most important gastric response is the production of massive amounts of mucous.

Central Building Research Institute, Roorkee

Silicones for Water-Proofing of Mud-Walls

Silicones have great potentialities for use in water-proof coating compositions for buildings. They not

only confer water-repellant properties to mud walls, but unlike other water-proofing treatments, do not block capillary pores and allow breathing. This has been revealed by studies carried out at the Institute on silicone-coated and uncoated *kutchha* briquettes, bricks and wall panels. The silicone composition can be applied with brush or by spraying without affecting the appearance of the surface. The investigations have been extended to wall surfaces in village houses for testing their effectiveness against natural weathering.

Central Leather Research Institute, Madras

Fat-liquor from Tallow

A process for the sulphonation of tallow, using chlorosulphonic acid, has been developed. The conventional method of sulphonation does not give a satisfactory product.

Sulphonated tallow has been employed in the fat-liquoring of leathers required for sport goods.

Substitute for Wattle Bark

Tanning trials carried out at the Institute with blends of *Pithecolobium dulce* and *Peltophorum ferrugineum* barks (80-83 per cent) with myrobalan have shown that sole leather of good quality can be produced by employing the

usual tanning process. The suitability of the barks for use in the rapid tanning process developed at the Institute, is now being examined.

Central Electrochemical Research Institute, Karaikudi

Benzaldehyde from Toluene

Benzaldehyde is an important intermediate in the production of synthetic dyestuffs; it finds application as a flavouring agent in food industries also.

A continuous cyclic process (overall efficiency, 40-45 per cent) has been developed for the production of electrolytic benzaldehyde directly from toluene. The process consists in oxidising manganous sulphate in an electrolytic cell, and using the resulting manganic sulphate to oxidise toluene to benzaldehyde. The novel feature of the process is the use of manganous sulphate paste (in sulphuric acid) instead of manganous sulphate solution. The use of the paste leads to a reduction in the volume of acid handled to one-tenth.

Regional Research Laboratory, Hyderabad

Creosote from Low-Temperature Tar

Creosote suitable for timber preservation, conforming to the I.S. specifications except in respect of specific gravity, has been prepared utilising tars obtained by the low-temperature carbonisation of coal. The creosote compares favourably with that prepared by high-temperature carbonisation.

Indian Institute for Biochemistry & Experimental Medicine, Calcutta

Immunogenic Tissues

Cytobiological changes in cultured liver tissue of white mice, immunized against rabbit R.B.C., have been studied. The study reveals a relative increase in both cell size and nuclear size compared to the normal; the nucleocytoplasmic ratio remains unaltered. An enhancement of alkaline phosphatase activity in immunogenic tissue has been demonstrated by histochemical procedures followed by comparative microphotometry.



CBRI, ROORKEE—Silicone treated panels (2 & 4) and untreated panels (1 & 3) after rains

CSIR Patents

(APPLICATIONS FILED)

61801: *An electrochemical process for the production of aluminium hydroxychlorides*—A. Jogarao & B. A. Shenoy, CECRI, Karaikudi.

In the invented process, unlike some of the processes known till now, aluminium hydroxychlorides are produced without evolution of chlorine gas. The process is cheap, simple to handle, does not require complicated cell setup and is amenable to control in respect of the extent of dissolution of aluminium.

62261: *A temperature sensitive ceramic composition having medium permittivity and retraceable characteristics*—T. V. Ramamurti, C. V. Ganapathi, R. Krishnan, Aftab Ahmad & K. Vaitheswaran, NPL, New Delhi.

A ceramic composition having nearly linear variation of dielectric constant with temperature and excellent reproducible characteristic is developed.

(APPLICATIONS ACCEPTED)

57958: *A primary wet cell*—V. Aravamuthan, CECRI, Karaikudi.

58203: *Improvements in or relating to the preparation of ethyl ester of musk acid 2-methyltridecanoic acid*—K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

58352: *Electrolytic preparation of cuprous oxide from brass*—B. B. Dey, H. V. Udapa, S. Sampath & R. Viswanathan, CECRI, Karaikudi.

58384: *A process for the recovery of copper from copper pyrites*—G. C. Mitter, B. K. Bose & S. G. Dighe, Assay Deptt. & Silver Refinery Project, Calcutta.

58553: *Improvements in or relating to mullite refractories from kyanite*—Rabindar Singh & H.P.S. Murthy, NML, Jamshedpur.

58597: *A novel vehicle lamp device*—C. R. Gupta, NPL, New Delhi.

58756: *Improvements in the manufacture of maleic anhydride*—R. T. Thampy & I. K. Suri, Shri Ram Institute for Industrial Research, Delhi.

58869: *Refractory compositions comprising graphite and silicon carbide*—T. V. Prasad, H. P. Srinivasamurthy & Rabindar Singh, NML, Jamshedpur.

59088: *Production of delta 3-carene polymers*—Lourdu M. Yeddapanalli & R. Santhanam, Loyola College, Madras.

Research Papers

EFFECTS OF CERTAIN PROTEIN FOODS ON BLOOD-SUGAR LEVELS AND GLUCOSE TOLERANCE—M. Srinivasan, CFTRI, Mysore. *The Lancet* (August, 17, 1957), 317-20.

The effects of ingesting known quantities of certain protein foods and proteins on blood-sugar levels and glucose tolerance have been determined in hyperglycaemic and healthy men. Casein, protein from tender dolichos (*Dolichos lablab*) and protein from black gram

(*Phaseolus mungo*) and black gram itself, are effective. *Thur dhal* (*Cajanus cajan*) protein from mature dolichos, gelatin, and a mixtures of amino-acids as in casein are less effective. Possible mechanisms for the observed effects and the significance of the results are discussed.

CYCLONE WASHER FOR COAL CLEANING—A. K. Chakravarti, G. G. Sarkar & A. Lahiri, CFRI, Jealgora. *Indian Eastern Engr* (Bombay), 121(4) (1957), 227-232.

Washing of coal crushed to sizes $\frac{1}{2}$ - $\frac{1}{4}$ in. in the heavy medium plant of the conventional type is not practical due to the low settling rate of these sizes. The cyclone type of washer, recently developed, gives exact separation for fine size coal at very high throughput rates and also with good efficiency.

Performance and operating data of pilot cyclone washers (3 in. and 6 in. diam.), fabricated and operated at the Institute, are recorded.

ADVERTISEMENTS

Applications are invited for the undermentioned posts. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Requests for forms must specify the details of the post.

The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well qualified and experienced candidates.

Application forms duly filled in and accompanied by crossed Indian postal order for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Number of advertisement and the post applied for must be indicated at the top of the application form. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

REGIONAL RESEARCH LABORATORY, HYDERABAD

(Advertisement No. 79)

Deputy Director: Scale of pay, Rs. 1,600—100—1,900.

QUALIFICATIONS: High academic qualifications in science or technology with adequate experience in research, industry and administration.

Last date for the receipt of applications, Jan. 21, 1958.

CENTRAL FUEL RESEARCH INSTITUTE, JEALGORA

(Advertisement No. 6)

1. Senior Scientific Assistants: Scale of pay, Rs. 250—25—500.

QUALIFICATIONS: A degree in science (Physics & Chemistry), Chemical Engineering, Mechanical Engineering, or Fuel Technology with research experience or Honours degree in Geology or Diploma of the Indian School of Mines & Applied Geology, Dhanbad, with experience in coal geology and mapping of coal seams.

2. Technical Operators: Scale of pay, Rs. 250—25—500.

QUALIFICATIONS: A degree in Chemical Engineering or Mechanical Engineering, preferably also a degree in basic science. Experience of operation of carbonisation, gasification, or other large-scale plants.

3. Senior Technical Assistant (Library): Scale of pay, Rs. 250—25—500.

QUALIFICATIONS: A degree in science or arts with diploma in librarianship. At least 5 years' experience in library science.

Applications (stating age, qualifications, and experience) accompanied by crossed Indian Postal Order of Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) should be sent to the Administrative Officer, Central Fuel Research Institute, Jealgora P.O., Dhanbad, by Dec. 31, 1957.

NEED FOR SOCIAL UNDERSTANDING OF SCIENCE

Prof. Thacker's Address to Scientists

The 45th Session of the Indian Science Congress was inaugurated by Shri Jawaharlal Nehru, Prime Minister at Madras on 6 Jan. 1958. Prof. M. S. Thacker, Director-General of CSIR and General President of the Congress,



Prof. M.S. Thacker

delivering the presidential address, stressed the importance of social awareness and social support of science for the development of science, technology and invention in the country. He said that it was the responsibility of the scientists to create and promote the public understanding of science.

After a brief historical survey of the causes leading to the present dominant position of science and technology in the Western countries, Prof. Thacker pointed out that social awareness and social support of science have always determined the progress and direction of science. "If history has a lesson", he said, "it is this: Everything that sustains and progresses comes as an upsurge from within, not as a result of something imported or invited from without. Nothing sustains unless it is of the people and by the people".

Discussing the present technological development in India, Prof.

Thacker referred to the twin problems confronting the country, viz. the shortage of technical personnel with special skills and the need for liberalizing the education of the scientist. The demand for technical personnel has far outstripped the facilities available for training, and this has necessitated a re-evaluation of the present training programmes. To meet this situation, a system of interchange of scientists and specialists between universities and research laboratories, and between them and industry has been suggested. The deployment of scientists, engineers and technologists and the placement of technical personnel should receive attention. He spoke with concern of technical men being weaned away to other walks of life, and of universities and technical institutions being depleted of their best teachers. The real solution to these problems does not lie merely in the training programmes for technical personnel but in making serious efforts to seek out all those who have talent to profit by a scientific career. Systematic talent search on a nation-wide scale has to be undertaken, and the talents, abilities and aptitudes of the youth tended and nourished.

Continuing Prof. Thacker observed, "Science, technology and invention are the most important elements for improving the material welfare of the people and their development is conditioned by social purposes and social support.

Without such support, science and technology cannot find the means or the inspiration for development. Further, some of the new developments in science and technology have inculcated a fear of knowledge which has potentialities for more harm than good. In this situation, safety lies in the collective social wisdom, for it alone can control properly the direction of technological applications. The clear requirement, then, is to exert and spread the understanding of science among the people so that, assured of public support, we may move with freedom and explore the beneficent results which science and its applications make possible".

The educational task involved in promoting the public understanding of science is a gigantic one. The important thing is to stimulate interest in inquiry among the people as a whole, particularly among the youth. The climate for this great educational task has become particularly favourable since Independence. It is to this task of promoting public understanding of science that scientists must devote themselves. "It is a big responsibility", observed Prof. Thacker, "which can be discharged only when the scientists revise their 'Ivory Tower' attitude and recognise that their responsibility to society is no less important than their loyalty to science, and that there is no conflict between the two".

MEETINGS & SYMPOSIA

A meeting of the *Atmospheric Research Committee* will be held at the India Meteorological Office, New Delhi on Jan. 17, 1958. Shri S. Basu will preside.

A meeting of the *Advisory Committee for Rain & Cloud Physics Research Unit* will be held in the Conference Room of the CSIR Secretariat, New Delhi on Jan. 22, 1958 at 3.0 p.m. Dr. K. R. Ramathan will preside.

* * *

A symposium on *Recent Developments in Foundry Technology* will be held under the auspices of the National Metallurgical Laboratory, Jamshedpur, during Feb. 5-8, 1958. The Institute of Indian Foundrymen is collaborating with the Laboratory in organizing the symposium.

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, will inaugurate the symposium. Shri J. J. Ghandy, Chairman, Executive Council, NML, will preside.

The symposium is intended to bring together the members of the foundry industry and research workers for the exchange of technical know-how, and will focus attention on the developments in the light and heavy foundry industry in India during the Second Five-Year Plan period in relation to the progress in foundry science and the art of founding metals and alloys.

The symposium has been divided into the following sections:

1. Raw materials for moulds and cores.
2. Materials and methods for fettling and handling of materials in the foundry.
3. Recent innovations of foundry technology like the carbon dioxide process, shell-moulding, etc.
4. New developments in melting, including casting techniques and equipment.
5. Recent developments in the founding of ferrous and non-ferrous metals and alloys.
6. The position of foundry industry in India vis-a-vis the Second Five-Year Plan.

7. Foundry mechanization and layout.

8. Foundry management.

An exhibition of foundry raw materials, equipment and castings produced in India will be arranged on this occasion. Exhibits received from industrialists will also be displayed.

Representatives of organisations desirous of participating in the symposium may obtain the registration form from Dr. T. Banerjee, Deputy Director or Shri R. M. Krishnan, Senior Scientific Officer, NML, Jamshedpur.

Personal

*DR. K. SESHADRI has been appointed, on promotion, Senior Scientific Officer, CSRI, Bhavnagar, with effect from Dec. 24, 1957.

*SHRI G. P. RATILAL has been appointed Junior Scientific Officer, CBRI, Roorkee, with effect from Oct. 26, 1957.

*SHRI N. V. RAMAN has been appointed Junior Scientific Officer, CBRI, Roorkee, with effect from Nov. 1, 1957.

*SHRI S. V. TRYAMBAKRAO has been appointed Junior Scientific Officer, CBRI, Roorkee, with effect from Nov. 1, 1957.

*DR. J. G. JOSHI has been appointed Junior Scientific Officer, CFTRI, Mysore, with effect from Dec. 20, 1957.

*SHRI N. K. CHAKRAVARTI, Senior Scientific Officer, CRRI, New Delhi, relinquished charge of his post with effect from Nov. 1, 1957.

* * *

*DR. ATMA RAM, Director, CGCRI, Calcutta, has been nominated member of the *Panel for Refractories, Glass & Glassware and Ceramics and Enamel* of Export Promotion Council for Chemical and Allied Products, Union Ministry of Commerce & Industry.

*DR. A. LAHIRI, Director, CFRI, Jealgora, has been nominated member of the Committee set up by the Government of Assam for dealing with the processing of Nahorkatiya crude oil and gas.

*DR. A. LAHIRI has been nominated member of the Negotiating

CFRI Foundation Lecture

Prof. N.R. Dhar, Director, Shelia Dhar Institute of Soil Science, University of Allahabad, will deliver the Eighth Foundation Lecture of the Central Fuel Research Institute, Jealgora on Jan. 27, 1958. The subject of his address will be 'Coal in Land Fertility'.

Committee of the Board of *National Coal Development Corporation Ltd.* for Russian loan for the development of Korba coalfield.

*SHRI A. C. BANERJEE, Asstt. Director, CGCRI, Calcutta, has been nominated a member of the *Panel for Classification of Clays for Ceramic Industry* and one-man drafting *Panel for Insulating Fire-bricks*, Indian Standards Institution.

*SHRI C. D. DAVE, Senior Scientific Officer, NCL, Poona, has been elected member of the *Indian Institute of Chemical Engineers*.

*SHRI K. N. SRIVASTAVA, Senior Scientific Officer, NML, Jamshedpur, has been elected Associate Member of the *Institution of Metallurgists*, London.

*SHRI S. B. ROY, Senior Scientific Officer, CGCRI, Calcutta, has been nominated member of the *Wall Tiles Sub-Committee* of the Indian Standards Institution in place of Dr. Atma Ram.

*DR. B. L. SUBRAHMANYAM, Senior Scientific Officer, CEERI, Pilani, has been nominated member of the Committee constituted by the C.P.W.D., New Delhi, to examine the sound-proofing system for the engine test bed to be constructed at Safdarjung Aerodrome, New Delhi.

*SHRI BALESHWAR NATH, Secretary, Central Board of Irrigation and Power, New Delhi, has been nominated member of the *Advisory Committee of the Rain and Cloud Physics Research Unit*, CSIR.

*SHRI T. V. S. MURTHY, Senior Scientific Assistant, CBRI, Roorkee, has been awarded the Ph.D. degree by the Banaras Hindu University for his work on *Radio Communication*.

*SHRI KUMUDESWAR DAS, Junior Research Assistant, CSIR scheme—*Varietal suitability for preservation of fruits and vegetables in West Bengal*, has been awarded the M.Chem. Engg. degree by the Jadavpur University, Calcutta.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical
Laboratory, Jamshedpur

Electrolytic Chromium—Chromium metal of 97-98 per cent purity has been prepared by the electrolysis of acid liquor obtained by leaching chromium ore with acid at optimum pH. The process can also be used for the production of carbon-free ferrochrome.

Cobalt-free Enamel—Ground coat vitreous enamel compositions, without cobalt have been successfully formulated. The enamels have shown satisfactory performance under factory trials.

Central Fuel Research
Institute, Jealgora

Coke for Carbide Manufacture—A process for the production of low-ash, low-phosphorus coke for calcium carbide manufacture has been developed. The commercial feasibility of the process has been demonstrated by pilot plant trials.

Central Drug Research
Institute, Lucknow

Metabolism of *Streptomyces griseus*—Studies on the effect of inhibitors on the growth, streptomycin formation and glucose utilisation in *Streptomyces griseus* have shown that arsenate affects the growth and streptomycin formation. Arsenite and iodoacetate inhibit all the three activities. Fluoride slightly enhances streptomycin yield without effecting the growth of the organism or its glucose oxidation activity. Dinitrophenol markedly enhances the oxidation of glucose.

The presence of all the enzymes of the Embden-Meyerhof pathway, except isomerase, has been established in the cell-free extracts of *S. griseus*.

National Botanic Gardens,
Lucknow

Concrete from Jasmine Flowers—Some varieties of Jasmine, viz. *J. grandiflorum* (chameli), *J. multiflorum* (giant and kund), *J. auriculatum* (juhi), *J. arborescens* (niwari), *J. rigidum*, *J. flexile*, *J. sambac* (hazara-bela, desi-bela, motia, rae-bela and mugra) have

been examined for their concrete content. The highest percentage (0.56) of concrete is found in chameli while mugra contains the lowest percentage (0.16).

Central Salt Research
Institute, Bhavnagar

Salts from Sambhar Wastes—Processes have been developed for the economic recovery of sodium sulphate, sodium carbonate and sodium chloride from Sambhar crust, solid bittern and liquid bittern based on phase-rule studies of the quaternary system: $\text{NaCl}-\text{Na}_2\text{SO}_4-\text{Na}_2\text{CO}_3-\text{H}_2\text{O}$. Cooling evaporation and carbonation result in the recovery of more than 80 per cent of each of the constituents from Sambhar crust whereas by the usual procedures only sodium sulphate, amounting to 60 per cent of the sulphate is recovered. By properly adjusting the concentrations of solutions, chilling, evaporation and carbonation, the different salts have been separated from solid and liquid bitterns.

Sponsored Research

Vitamin A in Fish Liver Oils—Six species of fresh water fish (*Ophioccephalus straitus*, *O. muralius*, *Silundia*, *Catla catla*, *Pungasius* and *Mastacembelus armatus*) have been examined for their vitamin A content. The liver oils of the first three species contain much more vitamin A_2 than vitamin A. The presence of anhydro-vitamin A_2 and dehydrovitamin A_2 has been observed for the first time in fish liver oils.

The study of carotenoids in the liver, intestines and roes of *Wal-lago attu* fish has shown the presence of β -carotene, lutein esters and lutein alcohol in the liver, lutein alcohol in the intestines and β -carotene in roes. Vitamin A_2 aldehyde-retinene₂ and vitamin A_2 acetate have been prepared from vitamin A_2 , the former in a crystalline form—HOMI R. CAMA & P. R. SUNDARESAN, Indian Institute of Science, Bangalore.

Characterisation of Green Gram (*Phaseolus radiatus*) Proteins—The extraction of proteins from fat-free gram meal employing salt solutions of varying concentrations and

cationic and non-ionic detergents, has been investigated along with the effect of different factors such as extraction time, particle size, pH etc. on the solubility of proteins. Maximum amount of nitrogen is extracted by solutions containing sodium chloride and minimum by those containing mercuric chloride thereby exhibiting a specific cationic effect. Water alone solubilizes maximum amount of nitrogen and the presence of salts decreases it.

Above a critical micelle concentration, cationic detergents extract only 12 per cent soluble nitrogen whereas 80 per cent is extracted below it. In the case of anionic and non-ionic detergents this specificity is not observed.

Electrophoretic studies, with reference to effect of pH and ionic strength on the separation of proteins, have shown that the optimum ionic strength for the separation of protein components in the alkaline region (pH, 7.7-10.1) is 0.1. Studies on the fraction of the protein components have shown that (1) fractionation by ammonium sulphate and (2) cooling, isoelectric separation with HCl followed by ammonium sulphate precipitation yield the major globulin in a fairly pure state. Acid hydrolysates of this fraction are much in glutamic acid, aspartic acid and leucine but deficient in listidine and tyrosine—K. V. GIRI & (Miss) S. TAWDE, Indian Institute of Science, Bangalore.

Production of Pentaerythritol from Alcohol—Acetaldehyde, the starting material, was prepared by the dehydrogenation of alcohol by the static as well as the fluidized bed techniques; about 60 per cent conversion was achieved at 275°C. by the fluidized bed technique.

Pentaerythritol was prepared by adding acetaldehyde to a mixture of formaldehyde, water and slaked lime and heating to 45°C. The alkali in the mixture is then neutralized and the calcium sulphate formed is separated. Pentaerythritol is next crystallized out from the mixture—V. V. DESHPANDE & LASHKAR SINGH, Shri Ram Institute for Industrial Research, Delhi.

Research Papers

STUDIES ON CATION-EXCHANGE RESINS: PART I—PREPARATION AND PROPERTIES OF CATION-EXCHANGE RESIN FROM CASHEWNUIT SHELL LIQUID—N. Krishnaswamy, K. P. Govindan & R. N. Pandya, NCL, Poona. *Chem. & Ind. (Lond.)*, No. 44 (1957), 1456.

A STUDY OF THE OPERATION OF A 6 IN. DIAM. CYCLONE WASHER—A. K. Chakravarti, G. G. Sarkar & A. Lahiri, CFRI, Jealgora. *J. Inst. Fuel*, 30 (1957), 612-22.

HEAT OF WETTING AND OXIDATION OF COALS—J. N. Sharma, K. A. Kini, N. N. Das Gupta & A. Lahiri, CFRI, Jealgora. *J. Indian chem. Soc., Industr. & News Ed.*, 20 (1957), 95-98.

MECHANISM OF OXIDATION OF COAL WITH SPECIAL REFERENCE TO THE PRODUCTS OF OXIDATION—P. N. Mukherjee, J. N. Bhowmik & A. Lahiri, CFRI, Jealgora. *Fuel*, 36 (1957), 417-422.

THE ADSORPTION OF HYDROCHLORIC ACID GAS AND OF METHYLAMINE BY OXIDIZED COALS AND HUMIC ACIDS—S. P. Nandi, K. A. Kini & A. Lahiri, CFRI, Jealgora. *Fuel*, 36 (1957), 475-480.

TUNING OF INTERDIGITAL MAGNETRONS BY COAXIAL LINES—Amarjit Singh, NPL, New Delhi. *J. Electron. & Control*, 3 (1957), 183-93

BRIEFS

The *Hydroponicum* of the National Botanic Gardens, Lucknow was opened to public during Dec. 20-31, 1957. The science and technique of growing plants without soil were explained to the visitors by suitable demonstrations.

The following research schemes have been terminated with effect from Feb. 28, 1958:

1. *Studies on trypsin inhibitors*—Dr. (Mrs.) Kamala Sohonie, Institute of Science, Bombay.

2. *Use of photomultiplier tubes in the measurement of feeble X-ray intensities*—Prof. K. Banerjee, University of Allahabad.

PATENTS & PROCESSES

Applications Filed

62262: *Improvements in or relating to the detoxification of cottonseed products such as cottonseed meal, cottonseed flour or the like*—T. R. SESHADRI & KAILASH CHANDER, Delhi University, Delhi.

62263: *A process for the separation of tallow and tallow-like fatty acids into mainly saturated and oleic acids*—H. S. ZAHEER, V. V. R. SUBRAHMANYAM & K. T. ACHAYA, RRL, Hyderabad.

Applications Accepted

59250: *Electrowinning of lead from lead sulphate*—B. B. DEY, V. ARAVAMUTHAN & P. R. RAJAGOPALAN, CECRI, Karaikudi.

61320: *Improvements in or relating to the preparation of active carbon*—K. K. ROY, N. G. BASAK, & A. LAHIRI, CFRI, Jealgora.

Applications Sealed

52289: *A process for the hot dip aluminizing of ferrous materials*—A. N. KAPOOR, A. B. CHATERJEE &

B. R. NIJHAWAN, NML, Jamshedpur.

56532: *A new technique for the electrolytic preparation of cuprous oxide*—B. B. DEY, H. V. UDUPA, S. SAMPATH & R. VISWANATHAN, CECRI, Karaikudi.

56705: *Low melting chemically resistant glass compositions*—ATMA RAM, S. KUMAR & P. NATH, CGCRI, Calcutta.

56724: *A water dispersible DDT paste*—K. V. N. RAO, S. P. BHIDE, (Miss) S. B. KULKARNI & A. B. BISWAS, NCL, Poona.

58528: *Manufacture of light basic magnesium carbonate*—MATA PRASAD, B. K. SHUKLA & D. J. MEHTA, CSRI, Bhavnagar.

Process Leased Out

The process for the manufacture of *Karbogel* (Indian Patent No. 54264)—a desiccant and dehumidifier from coal developed at the Central Fuel Research Institute has been leased out for exploitation to M/s Bird & Co. Private Ltd., Calcutta.

ADVERTISEMENTS

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The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well-qualified and experienced candidates.

Application forms duly filled in and accompanied by crossed Indian postal order for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Number of advertisement and the post applied for must be indicated at the top of the application form. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

Last date for the receipt of applications, Jan. 28, 1958.

REGIONAL RESEARCH LABORATORY,
HYDERABAD

(Advertisement No. 80)

Assistant Director: Scale of pay, Rs. 1000-50-1200-100-1500.

QUALIFICATIONS: High academic qualifications with considerable research or industrial experience in oils and fats; experience in guiding research. Knowledge of foreign languages desirable.

CENTRAL ELECTROCHEMICAL RESEARCH
INSTITUTE, KARAIKUDI

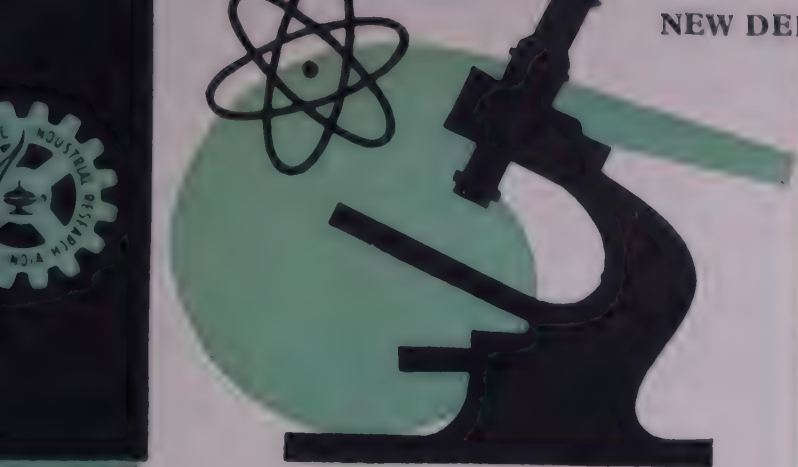
(Advertisement No. 80)

1. **Junior Scientific Officer:** Scale of pay, Rs. 275-25-500—EB-30-590.

QUALIFICATIONS: Master's degree in physical or inorganic chemistry with research and/or industrial experience, experience in survey and information work and ability to prepare technical and scientific notes. Knowledge of foreign languages desirable.

2. **Senior Scientific Assistants (2 posts):** Scale of pay, Rs. 250-25-500.

QUALIFICATIONS: For the first post—Degree in electrical engineering or metallurgy; experience of handling electrothermal equipment. For the second post—Master's degree in physical chemistry, physics or electronics with some research experience. Knowledge of chemical physics or electronics desirable.



CSIR NEWS

A Fortnightly News Bulletin

MYSORE

Regional Research Laboratory, Jammu & Kashmir

In accordance with the decision of the Council of Scientific & Industrial Research and the Government of Jammu & Kashmir, the Research Section of the Drug Research Laboratory, Jammu has been taken over by CSIR with effect from Dec. 1, 1957. The Laboratory has now been renamed as *Regional*

Research Laboratory, Jammu & Kashmir.

The Drug Farm and the Industrial Section (including the Analytical and Standardization Laboratory of the Research Section) will continue to function under the State Government.

PRIME MINISTER VISITS CLRI

The Prime Minister, Shri Jawaharlal Nehru, visited the Central Leather Research Institute, Madras on January 6, 1958. He was received by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research; Shri P. M. Sundaram, Secretary, CSIR; Dr. A. Lakshmanaswamy Mudaliar, Chairman, Executive Council, CLRI; and Dr. Y. Nayudamma, Assistant Director-in-charge of the Institute. Dr. Nayudamma took the Prime Minister round the Institute and the Exhibition specially arranged on the occasion. Shri Nehru showed keen interest in the processes and products developed at the Institute. He expressed pleasure at the progress made in the manufacture of industrial leathers and tanning auxiliaries, and the development of improved processes for tanning. Shri Nehru also addressed the members of the staff.

MEETINGS & SYMPOSIA

A meeting of the *Metals Research Committee* will be held at the National Metallurgical Laboratory, Jamshedpur on Feb. 6, 1958 at 10.0 a.m. Shri J. J. Ghandy will preside.

A meeting of the *Vanaspati Advisory Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi on Feb. 10, 1958 at 3.0 p.m. Prof. M. S. Thacker will preside.

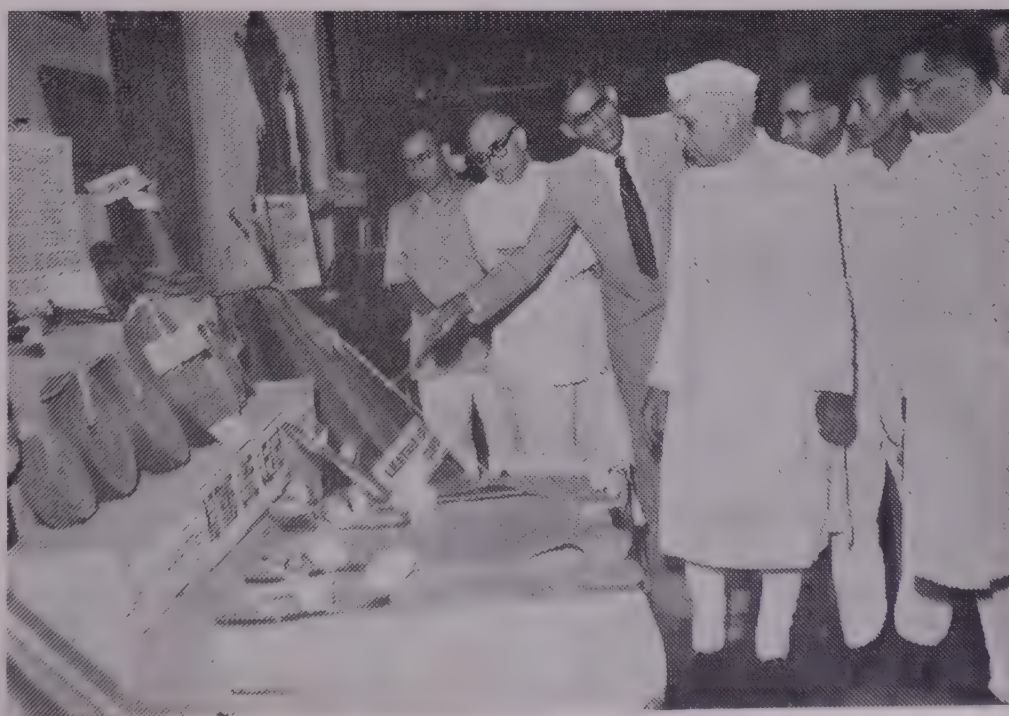
A meeting of the *Biochemical Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi on Feb. 11, 1958 at 10.0 a.m. Dr. B. C. Guha will preside.

SYMPOSIUM ON 'PRESTRESSED CONCRETE AS APPLIED TO BUILDINGS'

A symposium on *Prestressed Concrete as Applied to Buildings* will be held under the auspices of the Central Building Research Institute, Roorkee, during Feb. 10-12, 1958.

The symposium is being organised with a view to promote wider use of prestressed concrete for buildings and thus bring about economy in the use of cement and steel. It will also provide a meeting ground for engineers to discuss the problem and formulate proposals for accelerating the pace of progress in this field.

The following aspects of the subject will be discussed: (1) Materials and methods, specially the design and fabrication of prestensioning beds and problems in the manufacture of indigenous anchoring devices; (2) Prestressed roof for buildings; (3) Research on prestressed concrete; (4) Handling and erection of prestressed concrete structure; and (5) Economics of prestressed concrete as applied to buildings.



CLRI, MADRAS. Industrial leathers produced by processes developed at the Institute attracted the attention of the Prime Minister during his recent visit to the Institute

Personal

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been nominated a Vice-President of the Committee set up in connection with the *Birth Centenary Celebration* (Nov. 30, 1958) of the late Acharya Jagdish Chandra Bose.

*PROF. M. S. THACKER has been elected Honorary Member of the *Indian Association of Special Libraries & Information Centres*, Calcutta.

*DR. VIKRAM A. SARABHAI has been nominated a member of the Science Sub-Committee of the *Board of Scientific & Industrial Research* with effect from Jan. 24, 1958.

*DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been appointed a member of the Board of Directors of *M/s Sindri Fertilizers and Chemicals (Private) Ltd.*

*DR. B. R. NIJHAWAN, Director, NML, Jamshedpur, has been appointed a member of the *Bihar Industrial Development Council*.

*SHRI A. RAHMAN, Asstt. Director, CBRI, Roorkee, has been elected Vice-President, *Association of Scientific Workers of India*.

*SHRI N. L. JAIN has been appointed, on promotion, Senior Scientific Officer in the Fruit Products Control Order Scheme, CFTRI, Mysore, with effect from Dec. 17, 1957.

EXHIBITION OF CSIR PUBLICATIONS

The Council of Scientific & Industrial Research participated in the 'Science Exhibition' organised on the occasion of the 45th Session of the Indian Science Congress (Jan. 6-13) held at Madras. An interesting and colourful display of all the publications of the CSIR was presented in an attractively got-up pavillion. The exhibits included, among others, the *Wealth of India*, periodicals, monographs, proceedings of symposia, reports and bulletins.

The Prime Minister was among the many distinguished persons who visited the pavillion and evinced keen interest in the publications displayed.

The Central Road Research Institute took an active part in the Twenty-second Session of the Indian Roads Congress (Jan. 4-8) and ECAFE seminar on Low Cost Roads (Jan. 9-18) held in New Delhi. The Institute contributed interesting items to technical exhibition on '*Means and Methods of Constructing Cheap Roads*', organised on the occasion. The forty-five exhibits, displayed in the Institute's Pavillion were specially selected to illustrate the work of the Institute in the fields of (i) soils, (ii) concrete pavements, (iii) bituminous pavements, (iv) road design and construction and (v) traffic safety.

The Institute's Pavillion attracted a large number of visitors who evinced keen interest in the processes and products displayed.

The delegates to the Congress and the ECAFE Seminar were shown round the Institute on Jan. 9 and 14, 1958 respectively.

Shri J. J. Ghandy, Chairman, Executive Council, National Metallurgical Laboratory, Jamshedpur addressing a Press Conference at the Laboratory on Dec. 18, 1957 complimented the Laboratory for the useful work it is doing and pointed out that much of it had a direct bearing on the industrial development of the country during the Second Five-Year Plan. Shri Ghandy stressed the necessity of holding periodical Press Confer-

'THACKERON' STAINLESS STEELS

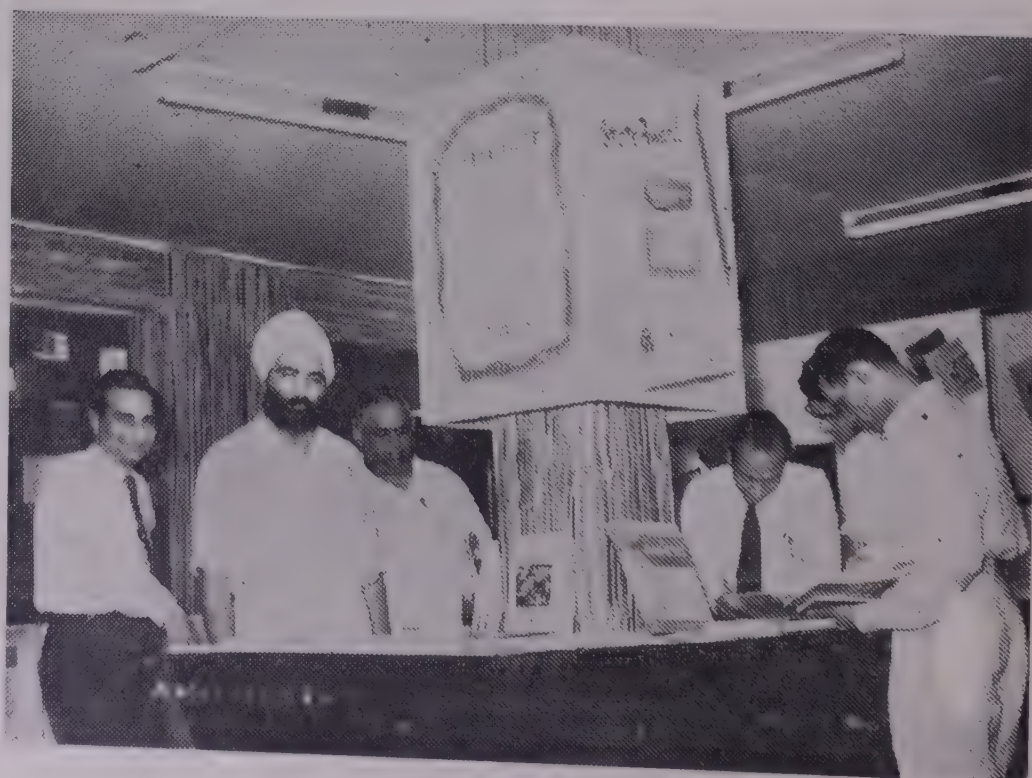
The new nickel-free austenitic stainless steels developed by the National Metallurgical Laboratory, Jamshedpur have been named 'Thackeron' Stainless Steels after Prof. M. S. Thacker, Director-General, Scientific & Industrial Research. In these steels, the nickel in 18-8 chromium steels has been replaced by manganese. Another important constituent of the steels is nitrogen.

ences to acquaint the public with the work of laboratories.

Shri Manubhai Shah, Union Minister for Industry, visited the Central Leather Research Institute on Dec. 21, 1957. He was shown round the Institute by Dr. Y. Nayudamma, Assistant Director-in-charge, CLRI, Madras.

The Minister expressed satisfaction at the useful work carried out at the Institute and suggested that a body should be set up for coordinating the work of the Institute and organizations such as the All-India Khadi and Village Commission and the Small Scale Industries Institutes.

The research scheme, *Study of physical properties of high polymers in relation to their molecular structure*, under Dr. S. Bhagavan-tam, Director, Indian Institute of Science, Bangalore, has been terminated with effect from Jan. 13, 1958.



A view of the Publications Pavillion at the 'Science Exhibition' of the Indian Science Congress, Madras

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical
Laboratory, Jamshedpur

Up-grading of Manganese Ores — Beneficiation of low-grade manganese ores from Rairakhol mines, Sambalpur (Orissa) and Chitaldrug, Mysore has been attempted in order to obtain concentrates rich in manganese.

Reduction roast of unwashed Sambalpur ore —35 mesh size (Mn, 38.53 per cent) followed by magnetic separation produced a manganese concentrate assaying 55.2 per cent manganese (Mn/Fe, 7:1) with a manganese recovery of 81.0 per cent. The concentrate had a high phosphorus content (0.34 per cent) which could not be reduced by flotation with fatty acids.

Similar treatment of washed ferruginous manganese ore from Chitaldrug (Mn, 32.51 per cent) at -3 mesh followed by magnetic separation at -48 mesh gave manganese concentrate assaying 54.4 per cent manganese (Mn/Fe, 7:1) with manganese recovery of 52.0 per cent. Magnetic separation at finer sizes did not improve the quality of the concentrate.

Central Food Technological
Research Institute, Mysore

Mango Cereal Flakes — Mango cereal flakes, a new product based on mango solids (49 per cent), wheat flour (23 per cent) and sugar (28 per cent) has been developed as a part of the investigations being carried out at the Institute on new and economic uses for mango. The product contains carotene equivalent to about 3500 I.U. of vitamin A per ounce. It has agreeable taste and flavour and can be used as a thickener and flavouring material for ice creams. It has good preserving qualities when kept in hermetically sealed tins and glass containers.

Storage of Food Grains — Cereals, pulses and spices can be stored in jute bags in ware-houses for 8-10 months without any infestation by insects as the result of a process developed in the Institute. The process consists in fumigating grain and impregating the jute bags with an insecticidal formulation. The process named 'Duro-fume Process' is cheaper and superior to other

conventional fumigation and other processes in use for grain preservation.

Central Building Research
Institute, Roorkee

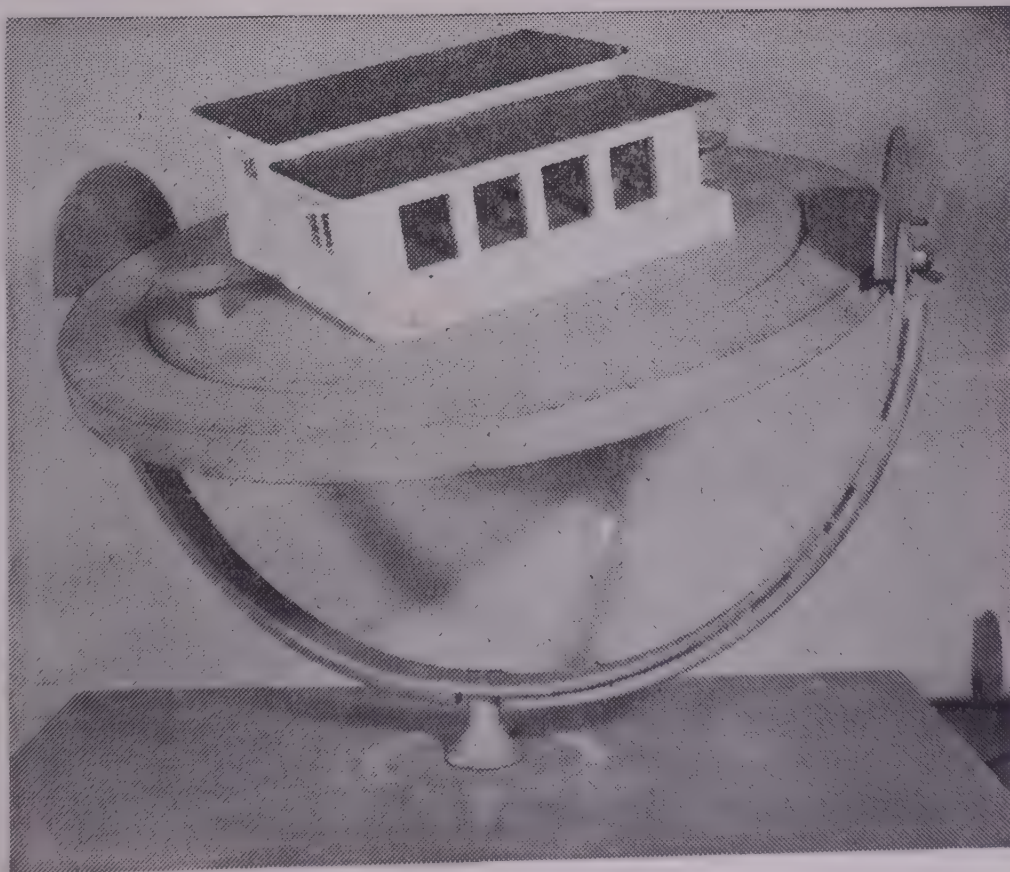
Thermal Efficiency of Buildings — Studies have been initiated at the Institute for determining the proper orientation of buildings in order to achieve the best thermal efficiency. 'Heliodon' is the name of the equipment employed for this purpose. With this equipment, it is possible to simulate the orientation of a building in any part of the world. The orientation of the building can be varied by rotating the inner circular platform on which the model of the building showing all the exterior details in proper proportions, is placed. Also the effects of diurnal movement of the sun can be studied by moving the turntable about the vertical axis. A lamp with a parabolic reflector serves as the sun. The lamp is fixed on a vertical pillar marked for different months of the year and is placed at a fixed distance from the Heliodon. The most suitable orientation—one for which the area of the building exposed to the sun is maximum in winter and minimum in summer—is determined by rotating the platform

carrying the model and observing the extent of sunshine and shade in the building.

Sponsored Research

Mechanism of Explosion: Combustion of methyl alcohol — Study of the mechanism of combustion of methyl alcohol has been undertaken because methyl alcohol is the intermediate product according to hydroxylation theory of combustion, and an understanding of the mechanism of its combustion would help in the understanding of the mechanism of combustion of complex fuels. The combustions of methyl alcohol flames at various air-fuel ratios have been studied with special reference to size, luminous, and special characters.

The colour of methyl alcohol flame is light blue in the inner cone and pale blue in the outer cone and is non-luminous at all air/fuel ratios. The spectra of the inner cones contain CH, OH, C₂, CO and cool flame bands; HCO band was not present which is of interest. The spectra of the outer cone contain OH and CO bands similar to ethyl alcohol flame. Commercial methyl alcohol, gives CN and NH bands — N. R. TAWDE & M. I. SAVADATTI, Karnatak University, Dharwar.



CBRI, ROORKEE—Heliodon, an equipment used for studying the thermal efficiency of buildings

Acid Metabolism in Plants—The diurnal variation of acidity in the leaves of *Coleus aromaticus* (Labiata) has been investigated and the individual organic acids present in the plant extracts have been determined by two dimensional paper chromatographic technique.

Malic, citric, succinic and an unidentified acid comprise nearly the entire organic acid content of the leaves. Although malic and the unidentified acid together account for the major fraction of the acid content of the leaves, the former is the one which undergoes marked diurnal variation.

Titration acid and malic acid contents have been observed to increase during the night and this is directly related to the diminution of soluble carbohydrates (especially glucose) and respiratory carbon dioxide. The rates of acid formation and decomposition are greater at higher temperatures, the latter being faster.

The results of the studies so far carried out show that although the magnitude of the changes in the content of the carbohydrates is too small to account for the entire organic acids lost during the deacidification, the synthesis of starch in the dark indicates that at least a part of the organic acids decomposed is built back into carbohydrates by the process of oxidative anabolism—SHRI RANJAN & T. RAJA RAO, Allahabad University.

Research Papers

LESSER-KNOWN INDIAN VEGETABLE FATS: PART I—OLEIC-RICH FATS—V. V. R. Subrahmanyam & K. T. Achaya, RRL, Hyderabad. *J. Sci. Fd Agric.*, 8 (1957), 657.

LESSER-KNOWN INDIAN VEGETABLE FATS: PART II—LINOLEIC-RICH FATS—V. V. R. Subrahmanyam & K. T. Achaya, RRL, Hyderabad. *J. Sci. Fd Agric.*, 8 (1957), 662.

PRELIMINARY NOTIONS ON SAMPLING—Harish Goel, CBRI, Roorkee. *Proc. Indian Standards Convention*, December, 1957.

NON-ERODABLE. MUD-PLASTER—A NEW APPROACH—S. S. Rehsi, CBRI, Roorkee. *J. Instn Engrs (India)*, December, 1957.

PATENTS & PROCESSES

Applications Filed

62159: *Compositions having newly discovered medicinal properties from bitter constituents of nim*—C. Mitra, NCL, Poona.

62292: *Electro-winning of zinc and recovery of elemental sulphur from zinc sulphide ores*—V. Aravamuthan & R. Srinivasan, CECRI, Karaikudi.

62293: *Electro-winning of zinc by electrolysis of zinc chloride solutions*—V. Aravamuthan & R. Srinivasan, CECRI, Karaikudi.

62336: *A new process for the conversion of coal, coke or the like into an ion-exchanger for water softening, deionisation and the like*—B. K. Majumdar, S. K. Chakaravarty, S. N. Roy & A. Lahiri, CFRI, Jealgora.

62751: *Manufacture of cellulose carboxyalkyl ethers*—C. D. Dhariyal & V. B. Chipalkatti, Shri Ram

Institute for Industrial Research, Delhi.

Applications Accepted

58007: *A process for the manufacture of active carbon from coals and lignites*—S. H. Zaheer, D. S. Datar, T. L. N. Rao, R. Osmani, E. R. Saxena, K. N. Moorthy, Y. Venkatesham, M. G. Krishna, G. S. Chowdhury & K. G. Rangrez, RRL, Hyderabad.

59455: *A process for the preparation of a protein hydrolysate for oral use*—C. R. K. Murti & V. Verma, CDRI, Lucknow.

Applications Sealed

55289: *A process for the hot-dip aluminizing of ferrous materials*—A. N. Kapoor, A. B. Chatterjee & B. R. Nijhawan, NML, Jamshedpur.

56725: *A new process for the purification of selenium*—D. N. Sen & J. Gupta, NCL, Poona.

ADVERTISEMENTS

Applications are invited for the undermentioned posts. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road New Delhi-2. Requests for forms must specify the details of the post.

The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well-qualified and experienced candidates.

Application forms duly filled in and accompanied by crossed Indian postal order for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Number of advertisement and the post applied for must be indicated at the top of the application form. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR

(Advertisement No. 1/58)

1. Assistant Directors (2 posts): Scale of pay, Rs. 1,000—50—1,200—100—1,500.

QUALIFICATIONS: For the first post—High qualifications in metallurgy or chemistry with considerable experience in guiding research in chemical metallurgy and electro-metallurgy as applied to electro-winning of metals. For the second post—High qualifications in metallurgy with considerable experience in guiding research in various metallurgical problems including foundry technology. Experience in manufacture or research in stainless steel, heat-resistant alloys, etc. with published papers desirable.

2. Senior Scientific Officers Grade II (2 posts): Scale of pay, Rs. 350—30/2—410—30—590—EB—30—770—40—850.

QUALIFICATIONS: For the first post—Good academic qualifications in metallurgy with adequate research experience in the development of stainless and special steel, creep and heat resistant alloys and in X-ray diffraction. For the second post—Good academic qualifications in metallurgy, chemistry or chemical engineering. Candidate must be familiar with extractive metallurgical techniques relating to ferrous and non-ferrous

metals based on thermodynamical concepts. Experience of setting up pilot plant in extractive metallurgy relating to iron and steel technology desirable.

Last date for the receipt of applications, Feb. 11, 1958.

CENTRAL FUEL RESEARCH INSTITUTE, JEALGORA

(Advertisement No. 1/58)

Senior Scientific Officer Grade II: Scale of pay, Rs. 350—30/2—410—30—590—EB—30—770—40—850.

QUALIFICATIONS: High qualifications in science or chemical engineering. Knowledge of high pressure technology and the synthesis of hydrocarbons and chemicals from coal and tar, with adequate research experience.

Last date for the receipt of applications, Feb. 11, 1958.

Research Fellowship

(Advertisement No. 2/58)

SHRI RAM INSTITUTE FOR INDUSTRIAL RESEARCH, DELHI

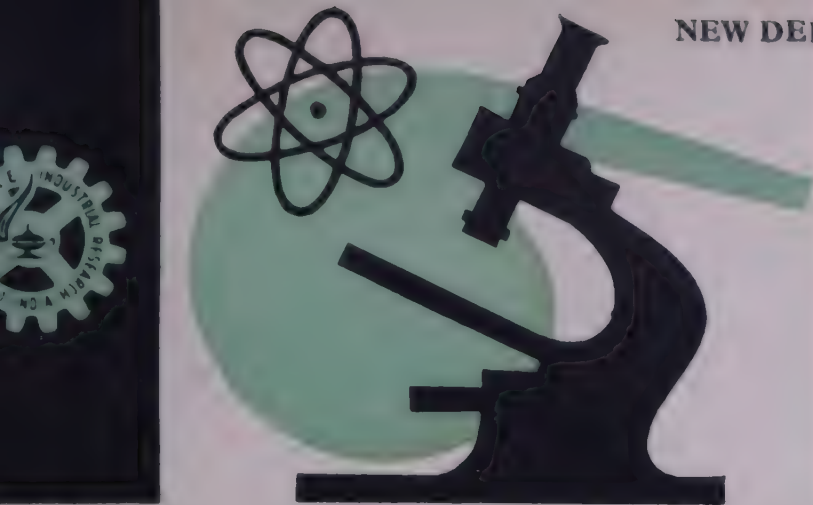
(Scheme: Polyvinyl acetate from alcohol)

Senior Research Fellow: Allowances, Rs. 400 p.m. fixed.

QUALIFICATIONS: M.Sc. or Ph.D. degree in organic or physical chemistry. Knowledge of high polymer products and practical experience in industry or pilot plant operation desirable. Candidate should be preferably below 27 years of age.

The fellowship is tenable for a period of two years, continuance during the second year being subject to satisfactory report.

Application forms and terms and conditions of fellowship are obtainable on payment of Re. 1 only in the form of a crossed Indian postal order payable to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi. Completed applications accompanied by a fee of Rs. 6.50 should reach the Secretary, CSIR, by Feb. 11, 1958.



CSIR NEWS

A Fortnightly News Bulletin

MEETINGS & SYMPOSIA

A meeting of the *Executive Council*, NCL, Poona, will be held on Feb. 14, 1958 at 11.30 a.m. Shri Kasturbhai Lalbhai, will preside.

A meeting of the *Executive Council*, NBG, Lucknow, will be held on Feb. 15, 1958 at 12.15 p.m. Dr. Sampurnanand, Chief Minister, Uttar Pradesh, will preside.

A meeting of the *Executive Council*, CDRI, Lucknow, will be held on Feb. 16, 1958 at 10.30 a.m. Dr. Sampurnanand, will preside.

A meeting of the *Soil Mechanics & Foundation Engineering Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Feb. 14,

1958 at 10.00 a.m. Shri S. R. Mehra will preside.

A meeting of the *Public Health Engineering Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Feb. 21, 1958 at 10.30 a.m. Shri N. V. Modak will preside.

A meeting of the *Standing Committee for Retiring Research Scientists* will be held in Room No. 12, Parliament House, New Delhi, on Feb. 24, 1958 at 10.00 a.m. The Vice-President, CSIR will preside.

A meeting of the *Applied Mechanics Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Feb. 24, 1958 at 3.30 p.m. Shri Kanwar Sain will preside.

*DR. T. BANERJEE, Deputy Director, NML, Jamshedpur, has been elected Fellow of the *National Institute of Science of India*.

*SHRI A. RAHMAN, Asstt. Director, CBRI, Roorkee, has been elected one of the Secretaries of the *Indian Society of History of Science*.

*DR. S. SEN, Senior Scientific Officer, CGCRI, Calcutta, has been nominated a member on the *Panel for Test Methods for Silica Sands* of the Indian Standards Institution.

*DR. A. P. MITRA, Secretary, Radio Research Committee, CSIR, in addition to his normal duties, will render part time consulting services for and on behalf of the Director, Ionosphere Research Laboratory, Pennsylvania State University, U.S.A.

Personal

*COL. B. N. MITRA has been appointed Assistant Director-General, Scientific & Industrial Research with effect from Jan. 28, 1958.

*SHRI V. CADAMBE, Asstt. Director, NPL, New Delhi who was on deputation with the Ministry of Defence has been appointed Director (Planning), *Central Mechanical Engineering Research Institute*.

*SHRI K. R. SITHARAMIAH has been appointed, on promotion, Assistant Civil Engineer, CFTRI, Mysore, with effect from Jan. 1, 1958.

*DR. B. R. NIJHAWAN, Director, NML, Jamshedpur, has been awarded *Padma Shri* by the President of India on the Republic Day (Jan. 26, 1958).

*DR. J. C. RAY, Director, IIBEM, Calcutta, has been elected Vice-President of the *Association of Microbiologists of India*.

(Contd. in col. 3)



CRRI, NEW DELHI—Delegates to the ECAFE Seminar on Low-Cost Roads, visited the Institute on January 14 and were shown round the various Divisions. Picture shows some of them in the Museum

Briefs

THE MILLENNARY CELEBRATIONS OF Al-Masudi, the tenth-century Geographer were celebrated under the joint auspices of the Indian Society for the History of Science and the Institute of Islamic Studies, Aligarh, on 18-19 January, 1958 at the Aligarh Muslim University. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, welcoming the delegates on behalf of the Indian Society for the History of Science dealt with the works of Al-Masudi, which among other things, he said, gave an insight into the status of technology in different countries during the tenth century.

PROF. M. S. THACKER, DIRECTOR-General, Scientific & Industrial Research, inaugurated the inaugural meeting of the Association of Microbiologists of India at Madras on Jan. 6, 1958.

THE EIGHTH CFRI FOUNDATION Lecture was delivered by Prof. N. R. Dhar, Director, Shieia Dhar Institute of Soil Science, Allahabad University at CFRI, Jealgora, on Jan. 27, 1958. The subject of the lecture was 'Coal in Land fertility'.

In the course of the lecture, Prof. Dhar pointed out that the use of molasses, straw, grass and similar products in admixture with basic slag—a waste product from blast furnaces—increased the total nitrogen content and fertility of the soil. Also, the mixture is capable of fixing nitrogen from the atmosphere and is a good source of available potash and phosphate. Finely divided coal when mixed with ammonium sulphate and urea and organic matter such as straw, cow dung, etc., has also been found to help in retarding loss of fertilizer.

A TWO-DAY SYMPOSIUM ON THE *Oceanography of the Bay of Bengal* was organised at the Department of Geology and Geophysics, Andhra University, Waltair on 15-16 December 1957, in connection with the visit of the eminent marine biologist, Prof. Francis P. Shepard of the Scripps Institution of Oceanography, La Jolla, California. The subject of the symposium intimately concerned the CSIR

research project; *Some aspects of Marine Geology* now under investigation by Prof. C. Mahadevan at the Ananra University. Fourteen papers were presented at the three sessions of the symposium, pertaining to marine geology, physical oceanography and marine biology. The opening addresses for all the three sessions were delivered by Prof. Shepard.

SHRI NARAYAN SINGH BISHT and SHRI N. DINESAN have passed the Old Diploma Course in Fruit Technology (1956-57) of the CFTRI, Mysore in the Second Division.

THE FOLLOWING HAVE BEEN AWARDED Junior Fellowships for research on the schemes noted against their names:

1. SHRI KISHORI SARAN SHARMA—*Studies in addition polymerization* (Lucknow University, Lucknow).

2. SHRI P. V. BHAIKAVAMURTY—*Botanical survey of the flora of University campus and Waltair* (Andhra University, Waltair).

SHRI SUKHAMOY ROY HAS BEEN awarded a Research Scholarship of Rs. 250 p.m. to work on the scheme,

Development of Gas Turbine and Jet Propulsion Unit (Bengal Engineering College, Howrah).

THE FOLLOWING RESEARCH SCHEMES will be terminated with effect from Feb. 28, 1958:

1. *A chromatographic study of fats and fatty acids*—Dr. D. Robello, Department of Chemical Technology, University of Bombay, Bombay.

2. *Thyroidal activity of thyroglobulins and other iodoproteins*—Prof. P. S. Sarma, University of Madras, Madras.

3. *Microbial synthesis of vitamin B₁₂*—Dr. B. C. Roy, University College of Science & Technology, Calcutta.

4. *Manufacture of upholstery and other special types of leather*—Superintendent, Bengal Tanning Institute, Calcutta.

5. *Study of characteristic behaviour of the Sunderbans mangroves, especially goran*—Superintendent, Bengal Tanning Institute, Calcutta.

6. *Study of metabolic degradation of 8-aminoquinolines*—The Director, Malaria Institute of India, New Delhi.

PATENTS & PROCESSES

Applications Filed

62890: *A new process for the production of 4-hydroxycoumarin and its derivatives*—V. R. Shah, J. L. Bose & R. C. Shah, NCL, Poona.

62938: *A process to produce dense carbon aggregates from carbonaceous materials of varied volatile contents*—H. P. Srinivasamurthy & P. Prabhakaram, NML, Jamshedpur.

62939: *Improvements in or relating to curing catalyst for the treatment of textile materials with amino/plast resins*—V. B. Chipalkatti, K. V. I. Ramalingam & N. B. Sattur, Shri Ram Institute for Industrial Research, Delhi.

Application Filed in U.K.

40253/57: *Improvements in or relating to stainless steels*—B. R. Nijhawan, P. K. Gupta, S. S. Bhatnagar, & B. K. Guha, NML, Jamshedpur.

Applications Accepted

57013. *A method for the pre-treatment of non-coking, weakly coking and semi-coking coals for*

conversion to coking coals—A. Lahiri, A. N. Basu & S. Sen Gupta, CFRI, Jealgora.

59418. *Isolation of ketosteroids from Lantana camara Linn.*—V. N. Sharma & K. N. Kaul, NBG, Lucknow.

59457: *A new process for preparation of fine dust or wettable powders of insecticides such as DDT*—(Miss) S. B. Kulkarni, P. S. Kolhatkar, A. B. Biswas, K. V. N. Rao & M. V. Kuber, NCL, Poona.

Applications Sealed

57007: *A process for the preparation of ethylene from ethyl alcohol*—V. V. Deshpande, R. K. Bhatnagar, S. Venkataraman, N. R. Kuloor & D. N. Daruvalla, Shri Ram Institute for Industrial Research, Delhi.

57884: *Improvements in or relating to magnesium silicate refractories and use of the same*—Rabindar Singh, V. K. Moorthy & P. C. Sen, NML, Jamshedpur.

57886: *A new curing agent for wet-salting of hides and skins*—S. C. Nandy, S. N. Sen & B. M. Das, CLRI, Madras.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical
Laboratory, Jamshedpur

High Alumina Cement—Red ferruginous bauxite from Shevroy Hills, Salem Dt., which is unsuitable for making refractories (due to high iron content), has been utilised for the production of calcium aluminate cement. Cement produced by melting the bauxite in an arc furnace was found to possess hydraulic setting properties comparable to those of the imported 'Cement Rondu'.

Central Glass & Ceramic
Research Institute, Calcutta

Estimation of Titanium in Silicate Materials—A rapid polarographic method for the estimation of titanium in minerals such as bauxite and monazite, and in clays has been developed. Titanium has been found to give an excellent polarographic wave in a supporting electrolyte consisting of sulphuric acid, sodium pyrophosphate (0.1 M) and gelatin (0.005 per cent); best results are obtained when the acidity of the test solution is around 0.15N. The method can be used for the estimation of titanium in ceramic products, enamels and glasses.

Central Food Technological
Research Institute, Mysore

Bulk Density of Parboiled Rice—The bulk density of parboiled rice is an index of its moisture content; this relationship is of importance in commerce. When parboiled rice is dried the shrinkage in its volume (17.5 per cent) is more than the loss in weight (10.5 per cent). With decrease in moisture there is a progressive increase in its bulk density (from 0.74 to 0.81). It is, therefore, recommended that it is profitable to make purchase of rice by weight rather than by measure.

Tapioca Macaroni—Results of feeding experiments carried out over a period of 6 months on children have shown that when rice is replaced by tapioca macaroni in the poor vegetarian diet, it increases the haemoglobin level of the children and improves their nutritional status.

Central Drug Research
Institute, Lucknow

Assay of Tincture Ephedra—In the method now employed for the assay of tincture ephedra, an unbreakable emulsion results during the extraction of alkaloid from the tincture. Two methods have been developed in the Institute in which this difficulty is not encountered. In the first method, the tincture is slowly evaporated and the residue taken up in an acid solution. The solution is then saturated with sodium chloride and ammonia and the alkaloid extracted with ether. In the second method the interfering substances are removed by lead acetate, the excess being removed by sulphuric acid. The solution is then treated as in the first method.

Experimental Atherosclerosis—The effect of feeding rabbits with coconut oil and groundnut oil, singly and in combination with cholesterol, on the development of atherosclerosis in the animals has been investigated. A slight increase in serum alpha 2 and beta-globulin and beta-lipoprotein contents has been observed in rabbits given coconut oil; similar increase in serum proteins is observed in the case of rabbits fed with groundnut oil alone with an increase in 0+ beta-lipoprotein content. Progressive increase in serum alpha 2 and beta-globulins and marked increase in 0+ beta-lipoproteins was observed when cholesterol was administered alone or in combination with the oils. These results indicate that a marked lowering of the ratio of alpha/0+ beta-lipoproteins is related to atheroma formation.

Regional Research Laboratory,
Hyderabad

Sulphur from Iron Pyrites—Investigations on the recovery of sulphur from Ingldahl (Mysore State) iron pyrites have shown that about 50 per cent of the sulphur present in the ore can be distilled off at 800°C. after subjecting it to magnetic separation; the remaining sulphur can be recovered by steam treatment.

Refining of Linters—Linters form an important raw material for the production of cellulose nitrate, cellulose esters and ethers required

in the manufacture of propellants, lacquers, viscose, rayon, plastics, etc. Conditions for refining linters from Indian cotton to yield high or low viscosity chemical cotton (α -cellulose, 98-99 per cent) have been worked out on a laboratory scale. A rotary digester has been fabricated for handling 5 kg. batches of linters.

Synthesis of Carbostyrils—Studies in the synthesis of carbostyrils, the starting compounds in the preparation of Analgen, Quinaseptol, Diaphtherin, etc., are in progress. Three compounds, viz., 8-methoxycarbostyril, 8-hydroxydihydrocarbostyril and 8-methoxydihydrocarbostyril have been synthesized starting with 2-nitro-3-methoxybenzaldehyde.

Sponsored Research

Urea-Formaldehyde Resin Formulations for Textiles—The urea-formaldehyde resin formulation employed in the Sfriferset process (Indian Pat. 53325) for imparting antishrink and anticrease properties to cottons and rayons has been improved and standardized. The stability of the urea-formaldehyde precondensate solution has been improved by employing a catalyst mixture of glycerol and boric acid (1:3). The solutions thus prepared are stable for over 200 hr. as compared to 8 hr. with solutions containing conventional acid salt (ammonium dihydrogen phosphate) catalyst.

Resin compositions obtained by: (1) treating glucose ureide with aqueous formaldehyde and (2) reacting glucose ureide with glyoxal, condensing the resulting product with formaldehyde and finally refluxing with glycerol, have also been tried. These compositions are quite stable and can be stored for long periods. Rayon fabrics treated with these compositions possess good dimensional stability and soft handle, and can be baked directly without any drying—K. V. RAMALINGAM, N. B. SATTUR & V. B. CHIPALKATTI, Shri Ram Institute for Industrial Research, New Delhi.

Production of Riboflavin by Mutant Yeast—The effect of varying the concentrations of phosphate, magnesium and ammonium sulphates, and of glucose in the cul-

ture medium on the growth of the mutant yeast and riboflavin production has been investigated. The yield of riboflavin has been found to increase with increase in the concentration of magnesium sulphate up to a level of 0.3 g./litre and of potassium hydrogen phosphate up to a level of 0.6 g./litre. Three per cent Dextrosol in the medium has been found to be the optimum concentration for the growth of the organism and riboflavin production; pure glucose gives poor yields. At 4 per cent concentration of sugar, the yield of riboflavin is independent of the concentration of ammonium sulphate; at 2 per cent concentration, an increase in ammonium sulphate concentration in the medium from 0.2 to 0.4 per cent adversely affects riboflavin production—K. K. MITRA & A. K. SEN GUPTA, Jadavpur University, Calcutta.

Production of Pentaerythritol from Alcohol—Acetaldehyde, the starting material, was prepared by the dehydrogenation of alcohol by the static as well as the fluidized bed techniques; about 60 per cent conversion was achieved at 275°C. by the fluidized bed technique.

Pentaerythritol was prepared by adding acetaldehyde to a mixture of formaldehyde, water and slaked lime and heating to 45°C. The alkali in the mixture then neutralized and the calcium sulphate formed separated. Pentaerythritol is next crystallized out from the mixture—V. V. DESHPANDE & LASHKAR SINGH, Shri Ram Institute for Industrial Research, Delhi.

Role of Electrolyte Imbalance in the Production of Hypertension—The effect of sodium, potassium and calcium on the contractile proteins of the unstriated muscles of the stomachs of the dog and the frog (*Rana tigrina*) and of the blood vessels in the hind limbs of dog has been studied by the dying muscle technique. Sodium acts directly on the contractile proteins of blood vessels and causes contraction resulting in hypertension, whereas potassium has a relaxing effect. Calcium has a powerful contractile effect and may be responsible for the physiological increase of blood pressure with age—INDERJIT SINGH, Medical College, Agra.

ADVERTISEMENT

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NATIONAL CHEMICAL LABORATORY, POONA

(Advertisement No. 4/48)

1. Senior Scientific Officers : Grade I (2 Posts) : Scale of pay, Rs. 600—40—1000—50/2 1150.

QUALIFICATIONS : Ph. D. in chemical engineering or other equivalent qualification, preferably with experience of pilot-plant design and process development work.

2. Senior Scientific Officers (for Pilot Plant work, 2 posts) : Scale of pay, Rs. 350—30/2—410—30—590—EB—770—40—850 or Rs. 600—40—1000—50/2—1150.

QUALIFICATIONS : For the first post—M. Sc. or Ph. D. in chemical engineering or technology, preferably with research and practical experience in cellulose technology. For the second Post—M. Sc. or Ph. D. in chemical engineering or chemical technology or textile chemistry, preferably with practical experience in a viscose plant.

3. Senior Scientific Officers : Grade II (3 posts) : Scale of pay, Rs. 350—30/2—410—30—590—EB—770—40—850.

QUALIFICATIONS : For the first post—Ph. D. in chemistry or biochemistry and good record of research in biochemistry with special reference to microbiology and its applications to industry. For the second post—Ph. D. in inorganic chemistry or M. Sc. with experience of process development of inorganic heavy chemicals. For the third post (for Radioactive Tracer Laboratory)—Postgraduate degree in radiochemistry or physical chemistry, with considerable research experience, including adequate experience in the handling of radioactive materials. Ability to initiate research programme on uses of radioactive isotopes in chemical research and industry.

4. Junior Scientific Officers (6 posts) : Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS : For the first post—High academic qualifications in chemical engineering with practical experience in industry or training in chemical engineering equipment design. For the second post—Ph. D. in physical chemistry or physics, preferably with research experience in colloid chemistry, or structural chemistry or applications of the principles of statistical thermodynamics, or instrumentation technique. For the third post—Postgraduate degree or diploma in electronics (radiophysics), together with experience in the design, construction and maintenance of electronic & electrical instruments and devices. For the fourth post—M. Sc. in organic chemistry with adequate experience in microanalysis. For the fifth & sixth posts—M. Sc. or Ph. D. in polymer or physical chemistry, preferably with research experience in synthetic polymers, rubber, adhesives or cellulose plastics.

5. Junior Scientific Officers (for Pilot Plant work, 2 posts) : Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS : For the first post—High qualifications in chemical engineering or chemical technology, preferably with experience of cellulose pulp production. For the second post—High qualifications in chemistry or chemical technology with experience of testing methods for cellulosic raw materials, pulp and viscose.

Last date for the receipt of applications, March 3, 1958.

CENTRAL FUEL RESEARCH INSTITUTE, JEALGORA

(Advertisement No. 4/58)

1. Senior Scientific Officer : Grade II (Coal Carbonisation) : Scale of pay, Rs. 350—30/2—410—30—590—EB—30—770—40—850.

QUALIFICATIONS : A degree in applied or industrial chemistry or chemical engineering. Experience and/or training in operation of coke-oven plants, particularly of the vertical retort type and in low temperature carbonisation on pilot plant scale is desirable.

2. Junior Scientific Officers (10 posts) : Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS : For the first post—Degree in applied chemistry or chemical engineering. Experience of coke-oven operation, coal blending, and techniques of coal carbonisation. For the second post—High qualification in applied or physical chemistry. Experience in research or surface chemistry, adsorption and coal constitution. For the third post—Good qualifications in science. Experience in ceramics, boiler fly-ash analysis, etc. For the fourth post—Good qualifications in organic or industrial chemistry. Experience in analysis of coal-tar, coke-oven byproducts, ion-exchange etc. desirable. For the fifth & sixth post—Degree in chemical engineering and experience in plant operation such as coke-oven plant, byproduct plant, tar distillation, gasification plant, coal washing plant etc. For the seventh, eighth, ninth & tenth posts—Good qualifications in Geology or diploma of the Indian School of Mines and Applied Geology and mapping of coal seams. Knowledge of coal petrography including quantitative analysis and thorough knowledge of sampling of coal and estimation of reserves of coal desirable.

Last date for the receipt of applications, March 3, 1958.

REGIONAL RESEARCH LABORATORY, HYDERABAD

(Advertisement No. 4/58)

Senior Scientific Officer : Grade II : Scale of pay, Rs. 350—30/2—410—30—590—EB—30—770—40—850.

QUALIFICATIONS : High academic qualifications and research experience in biochemistry or microbiology. Experience in problems related to microbial metabolism, fermentation or enzyme chemistry desirable.

Last date for the receipt of applications, March 3, 1958.

NATIONAL AERONAUTICAL RESEARCH LABORATORY

(Advertisement No. 6/58)

Planning Officer/Director : Scale of pay, Rs. 2,000 p.m. during the period of planning work and Rs. 2,000—100—2,500 as Director.

QUALIFICATIONS : High qualifications in aeronautical engineering with considerable practical and research experience in the field. Organizational experience will be an additional qualification.

Last date for the receipt of applications, March 8, 1958.

WIND POWER DIVISION, CSIR

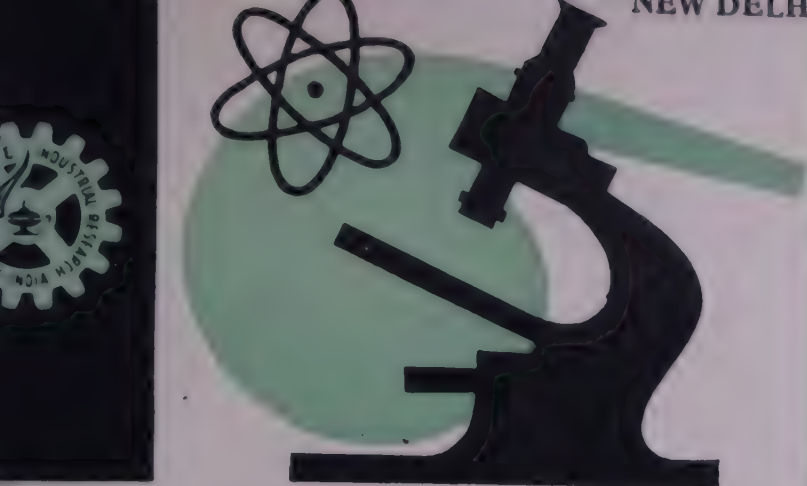
(Advertisement No. 7/58)

Special Officer : Scale of pay, Rs. 1,600—100—1,900.

QUALIFICATIONS : High qualifications in the appropriate branches of engineering or physics with adequate experience in fluid mechanics and/or aerodynamics. Experience in design and development of pertinent instruments and/or small-scale machinery is desirable.

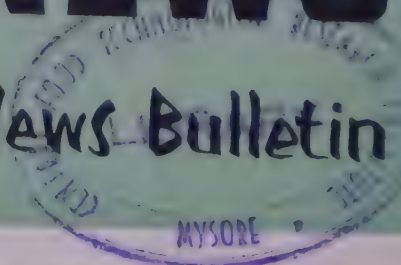
The officer will be placed in charge of the Division and will be responsible for the design and development of various types of machinery and equipment utilising wind power.

Last date for the receipt of applications, March 8, 1958.



CSIR NEWS

A Fortnightly News Bulletin



MAULANA ABUL KALAM AZAD (1889-1958)

We regret to announce the death of Maulana Abul Kalam Azad, Union Minister for Education & Scientific Research and Vice-President, Council of Scientific & Industrial Research on February 22, 1958 at New Delhi.

Maulana Azad was born in Mecca in 1889. He passed his childhood in Arabia and was educated under private tutors. At the age of 14 he had finished his studies in Arabic and Oriental Theology and had commenced teaching. He then visited Iraq, Egypt, Syria, Turkey and France, and through private study, acquired knowledge of European languages and literature.

In 1898 he came to India with his illustrious father. In 1912 he started an Urdu weekly, *Al-Hilal*, in Calcutta, which under his brilliant editorship, vigorously espoused the cause of national freedom and independence. The Government of India suppressed the publication and interned him in Ranchi.

Maulana Abul Kalam Azad had been a prominent figure in Indian politics for nearly three decades. He took a leading part in successive national civil disobedience campaigns which preceded the years of independence and was imprisoned several times. In 1923 he was elected President of the special session of the Indian National Congress in Delhi and again in 1930. He was elected President for the third time in 1940 and continued to hold the office till 1946. He was the chief spokesman of the Congress Party during the Cripps negotiations in



1942 and later in the negotiations with the British Cabinet Mission in 1946.

In January 1947, Maulana Azad joined the Interim Government as Member for Education and Arts. In August 1947, he became Minister for Education in the first National Government. In 1950, he became the Minister for Education and Natural Resources & Scientific Research. Maulana Azad was the Vice-President, C.S.I.R. since May 1952 and was closely associated with all its activities.

Under the guidance of Maulana Abul Kalam Azad as Education Minister, marked progress was made in all fields of education—elementary, basic, secondary, technical and university—and the Central budget for education rose from two crores to thirty crores.

He took a keen interest in literary and cultural activities. It was under his direction that the three national Academies of free India—the Sangeet Natak Akademi, the Sahitya Akademi and the Lalit Kala Akademi—came into being. India signed cultural agreements with a number of countries including Iran, Iraq, Japan, Indonesia and Turkey.

With the Maulana's scholarship and nationalism went an eloquence which equally enthralled learned audiences and political gatherings. He was a superb orator in Urdu, a language he enriched by his speeches and writings. Maulana Azad was the author of several books on philosophy and literature, including a commentary on the *Quran*.

* * *

At a meeting of the Staff of the CSIR held at C.S.I.R. Secretariat, New Delhi, the following condolence resolution was passed: "This meeting of the members of the staff of the Council of Scientific & Industrial Research places on record its sense of profound grief at the passing away of Maulana Abul Kalam Azad, architect of Independent India, statesman and scholar. The loss to the Council is particularly grievous as by his passing away, it has lost the mature guidance of a leader who combined scholarship with wisdom and knowledge with experience. This meeting pays its homage to the memory of the departed leader whose death has caused a void in the political and cultural life of the nation."

PRESTRESSED CONCRETE AS APPLIED TO BUILDINGS

Symposium at Roorkee

A symposium on 'Prestressed Concrete as applied to Buildings' was held at the Central Building Research Institute, Roorkee from 10-12 Feb. 1958. Distinguished delegates from China, France, Japan, U.K., U.S.S.R. and U.S.A. and delegates from the building industry in the country took part in the deliberations of the symposium. Dr. A. N. Khosla, Vice-Chancellor, Roorkee University inaugurated the symposium.

Nineteen papers dealing with the following subjects were presented: (A) *Materials and Methods*: (1) *Possibilities of indigenous manufacture of prestressed concrete equipment and products in India* by K. K. Banerjee; (2) *Problems in the design and manufacture of indigenous anchoring and tensioning devices* by M/s Killick Nixon and Co. Private Ltd.; and (3) *A portable pretensioning bed* by S. K. Narayan. (B) *Prestressed Roofs for Buildings*: (1) *Prestressed concrete roofs for buildings* by M/s Shalimar Tar Products; (2) *Precast prestressed concrete as applied in construction of building stairs* by R. N. Chatterjee & A. K. Banerjee;

(3) *Regulation and mixed construction* by Y. Guyon; (4) *Prestressed ceramics* by Y. Guyon; (5) *Applications of economical prestressed girders in industrial buildings in Poland* by Z. Zielinski; and (6) *Prestressed concrete as applied to buildings* by N. T. Patel. (C) *Research*: (1) *Transmission length and bond stress in pretensioned prestressed concrete* by R. H. Evans; (2) *The stresses in a three dimensional concrete frame* by R. H. Evans & J. J. Raftery; (3) *Composite prestressed concrete beams under repetitive loading* by A. M. Ozell & J. F. Diniz; (4) *Prestressing of continuous beams* by Jai Krishna & A. S. Arya; (5) *Design of prestressed concrete section for flexure* by S. M. K. Chetty; (6) *Tests on frames* by Y. Guyon; and (7) *Analysis of stresses in prestressed beam using Araldite models* by K. D. Mahajan; and (D) *Economics of Prestressed Concrete as applied to Building*: (1) *The economics of the 'T' for prestressed concrete building members* by H. Edwards; (2) *Trends in standardization of precast prestressed building members in the United States of America* by Ben C. Gervick (Jr.); and (3) *Economics of prestressed concrete buildings* by T. Y. Lin.

Dr. A. N. Khosla, in his address surveyed the use of prestressed concrete (P.S.C.) in India and abroad and outlined the aims and objects of the symposium. He said that the greatest obstacle to the use of P.S.C. in India, in spite of its low cost, was the undue diffidence on the part of engineers in treading new ground and trying new techniques. Other obstacles are the non-availability of high tensile steel and the absence of a system of anchoring prestressed steel bars.

Lieut. Gen. H. Williams, Director, CBRI, in his paper entitled "Prestressed Concrete in Building Construction" examined the causes why P.S.C. is not used extensively in building construction in India and made a few suggestions for overcoming the difficulties. He suggested that the National Buildings Organisation (NBO) should

organise a course on the use of prestressed concrete for the benefit of building contractors and engineers, and a manual containing recommendations of the code practice and constructional details should be published by the N.B.O.

Referring to the contributions of the Institute, Lieut. Gen. Williams made special mention of the prestressing screw-jack of 5 tons capacity capable of simultaneously tensioning two wires and a simple form of 'individual mould pretensioning bed' for use in the manufacture of pre-cast beams up to 20 ft., fabricated at the Institute.

Personal

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research and Secretary, Department of Scientific Research & Technical Education, Ministry of Education & Scientific Research, who was invited to London to be the principal guest at the annual function of the Institution of Electrical Engineers, England and who was to have left for London, and thence to Bonn, on February 24, 1958 has cancelled his tour.

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been appointed a Director of the Hindustan Machine Tools (Private) Ltd., Bangalore, with effect from Feb. 12, 1958.

*DR. K. S. G. Doss has been appointed Director, Central Electro-Chemical Research Institute, Karai-kudi with effect from Feb. 13, 1958.

*DR. Y. NAYUDAMMA has been appointed Director, Central Leather Research Institute, Madras with effect from Feb. 13, 1958.

The following have been conferred the titles mentioned against them by the President of India on the Republic Day (Jan. 26, 1958).

1. Shri J. J. Ghandy (Member, Governing Body)—*Padma Bhusan*

2. Dr. B. P. Pal (Member, Scientific Advisory Board, National Botanic Gardens)—*Padma Shri*

3. Shri L. A. Ramdas (Asstt. Director, National Physical Laboratory)—*Padma Shri*

4. Dr. A. Nagaraja Rao (Member, Executive Council, National Chemical Laboratory)—*Padma Shri*



CBRI, ROORKEE—Pre-cast doubly curved shell element developed at the Institute being tested by a Russian delegate to the Symposium

RESEARCH IN PROGRESS

National Laboratories

Central Food Technological
Research Institute, Mysore

Cooking of Freshly Harvested Rice—Freshly harvested rice invariably cooks to a pasty mass. A simple method has been evolved to overcome this difficulty. The rice is soaked prior to cooking for 2-3 hr. in cold water or for about 30 min. in hot water. The soaked rice is then placed in a perforated vessel and steamed for about 15 min. in a covered vessel. After steaming, the rice is transferred to the vessel and lowered into the boiling water when the rice is fully cooked in about 10 min. The degree of hardness of cooked rice can be varied by varying the preliminary soaking period.

National Metallurgical
Laboratory, Jamshedpur

Hydrogen in Steels & Alloys—An apparatus with all the necessary accessories has been fabricated in the Laboratory for the determination of total hydrogen in steels and ferro-alloys. The principle of the apparatus is based on the fact that when a sample of steel or alloy is heated to about 700°C. in a high vacuum (10^{-4} – 10^{-5} mm.), all the hydrogen diffuses out of the sample. The diffused gas is collected by the help of a Toepler pump and led to a gas analysis apparatus and analysed for hydrogen.

The hydrogen contents of a low alloy steel estimated by this apparatus have shown that the values are reproducible. Complete ex-

traction of the gas is possible in one hour at 700°C.; 90 per cent of the hydrogen is extracted during the first 30 min.

Central Drug Research
Institute, Lucknow

Enzyme Make-up of *Pasturella pestis*—Resting cells of *P. pestis* have been found to dehydrogenate a large number of substrates in the presence of phenyltetrazonium chloride. The degree of dehydrogenation effected with different substrates is in the following decreasing order: glucose, lactic acid, succinic acid and cysteine; glycerol is not dehydrogenated. No correlation has been observed between virulence of the organism and its dehydrogenase activity. The succinic dehydrogenase activity of the organism is almost completely inhibited by chlorotetracyclin and partially by oxytetracyclin, tetracyclin, chloromycetin, neomycin and dehydrostreptomycin.

Oral Contraceptives—Triiodothyroxine in low (3 mg./rat/day) and high (12 mg./rat/day) doses has been found to produce marked reduction in the weight of testis and seminal vesicles. The absence of any overt effect on the histology of the testis suggests that the effect of the drug is directly on the testis.

Cadmium salts administered to albino rats in 1 mg./100 g. body weight resulted in the total destruction of seminiferous tubules and Leydig cells in males. They have a transient effect on the ovary of females, ranging from intensely haemorrhagic to consi-

derable disorganisation of the theca region within a few hours to 24 hr. after administration. The effect reaches its peak in 48 hr. and the animals come back to normalcy in 15 days. The reversibility of the process in males is under study. Cadmium is found to diminish the responsiveness of accessory sexual glands like prostate, seminal vesicles of castrated male rats treated with testosterone. The mechanism of action of this metal on the gonad and its accessories is under investigation.

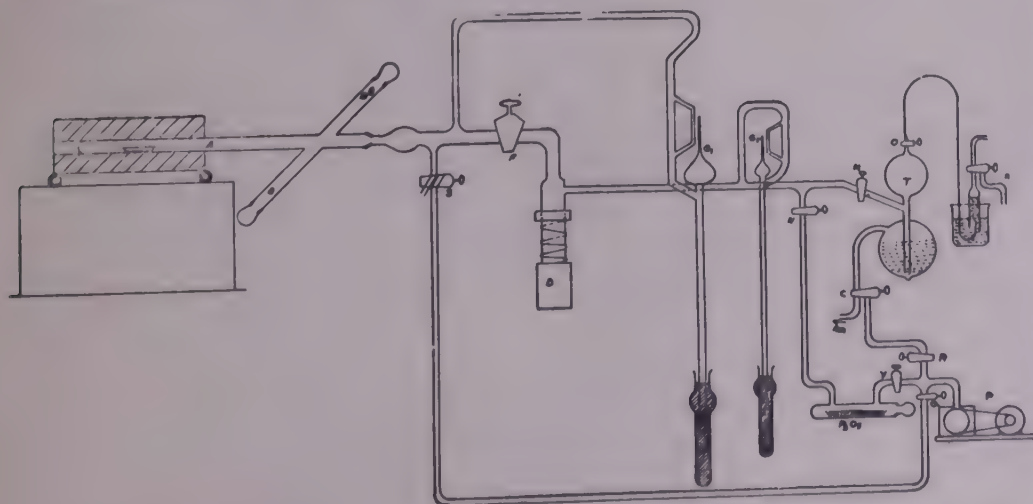
Sponsored Research

Heat Resistance of Bacterial Spores—The heat resistance of spores of *Bacillus subtilis* in canned tomatoes (*Lycopersicum esculentum*); *Patal* (*Trichosanthes dioica*); and *Karela* (*Momordica charantia*) has been studied. The spores were obtained from a strain of *B. subtilis* isolated from spoiled canned vegetables.

The results of the investigations have shown that the thermal resistance of the spores in the canned vegetables at different pH values, viz. tomato, pH 4.6; *karela*, pH 5.8; and *patal*, 6.6 decreased with decrease in the pH of the medium—A. N. Bose, R. M. Bardhan & S. B. Multag, College of Engineering & Technology, Calcutta.

Structural Steel & Concrete—Sufficient data are not available with respect to the true strength of steel members and structures encased with concrete.

Tests with steel columns (diam. 5 in. \times 3 in.) encased with concrete (overall diam. 8 in. \times 7 in.), for failure under load showed that failure occurred in the case of encased columns at a load of 130 tons whereas the control columns failed at a load of 40 tons. The permissible load for such encased structures according to Steel Code is 24.4 tons and according to the new R. C. Code 40.5 tons. The increase in the strength of the encased columns may be due to concrete bearing a part of the load and the decrease in the effective slenderness ratio of the encased and control column due to encasement. P. C. Verghese, Indian Institute of Technology, Kharagpur.



NML, JAMSHEDPUR—Apparatus (diagramatic) fabricated for the determination of hydrogen in steels and ferro-alloys

MEETINGS & SYMPOSIA

A meeting of the *Executive Council*, RRL, Hyderabad, will be held on March 3, 1958 at 3.00 p.m. Shri N. Sanjiva Reddy, Chief Minister, Andhra Pradesh, will preside.

A meeting of the *Executive Council*, CRRI, New Delhi, will be held on March 12, 1958 at 10.00 a.m. Shri Jagjivan Ram, Union Minister for Railways will preside.

A meeting of the *Physical Research Committee* will be held at the Department of Atomic Energy, Bombay on March 1, 1958 at 2.30 p.m. Dr. D. S. Kothari will preside.

A meeting of the *Cellulose Research Committee* will be held at the Forest Research Institute, Dehra Dun on March 1, 1958 at 4.00 p.m. Shri Vikram A. Sarabhai will preside.

A meeting of the *Chemical Research Committee* will be held at the CSIR Secretariat, New Delhi on March 8, 1958 at 10.00 a.m. Dr. A. Nagaraja Rao will preside.

A meeting of the *Road Research Committee* will be held at CRRI, New Delhi on March 12, 1958 at 10.00 a.m. Shri H. P. Sinha will preside.

LEATHER AUXILIARIES: SYMPOSIUM AT CLRI, MADRAS

A symposium on *Leather Auxiliaries* will be held at the Central Leather Research Institute, Madras, during March 14-17, 1958. Shri Bishnuram Medhi, Governor of Madras, will preside over the inaugural session of the symposium. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research will deliver the inaugural address.

The symposium will provide an opportunity for research workers in leather technology, and tanners, manufacturers and dealers in leather goods to meet and discuss problems relating to the manufacture of leather auxiliaries in the country.

The following subjects will be discussed: (1) Curing, soaking and deliming agents; (2) Bating, puering and pickling materials; (3) Depilants; (4) Natural tanning

materials: tanning extracts and modifiers; (5) Mineral and other tanning agents: syntans, oils, aldehydes, combination and miscellaneous tannages; (6) Neutralising, stripping, clearing and bleaching agents; (7) Surface active agents; (8) Oils, fats, waxes and water-proofing materials; (9) Finishing materials: mordants, dyestuffs, pigments, finishes and lacquers; (10) Dressing materials; (11) Filling agents, adulterants and substitutes; (12) Adhesives; (13) Disinfectants and fungicides; and (14) Evaluation, testing, standardisation and marketing.

An exhibition of leathers, leather auxiliaries and leather goods will be organised. Shri Morarji Desai, Union Minister for Commerce and Industry will inaugurate the exhibition which will remain open for 2-3 weeks.

SEMINAR ON MAGNETO-HYDRODYNAMICS

A study *Seminar on Magneto-hydrodynamics*, has been organised by the Atmospherics Research Committee, CSIR, at the Physics Lecture Theatre, Delhi University, Delhi, during March 2-3, 1958. Prof. H. Alfven of Stockholm, Visiting Professor at the Tata Institute of Fundamental Research, Bombay has kindly consented to inaugurate the seminar.

Lectures on the following subjects will be delivered during the seminar (1) Magneto-hydrodynamics and astrophysics (Prof. H. Alfven); (2) Hydrodynamics of conducting fluids (Dr. D. S. Kothari and Dr. F. C. Auluck); (3) Geomagnetic effects on the ionosphere (Dr. K. R. Ramanathan); (4) Does magneto-hydrodynamics explain solar phenomena better than classic dynamics? (Dr. A. K. Das); (5) Secular variations of the earth's magnetic field (Dr. S. K. Chakrabarty); (6) Utilisation of solar data for cosmic ray magnetic phenomena (Shri S. L. Malurkar); (7) Hydromagnetic disturbances (Prof. P. L. Bhatnagar); (8) Sunspots as hydromagnetic phenomena (Prof. N. R. Sen); and (9) Dynamo theory of earth's magnetic field (Shri K. S. Raja Rao).

A symposium on *Equipment for Food Industries* will be held at the Central Food Technological Research Institute, Mysore, under the joint auspices of CFTRI and the Association of Food Technologists of India during March 5-7, 1958.

BRIEFS

The Mining, Geological and Metallurgical Institute of India has awarded a bronze medal to Drs. M. M. Sen, S. K. Das Gupta and A. Lahiri of the Central Fuel Research Institute for their paper '*Studies on the Inflammability of Indian Coals*'.

DR. J. W. WHITAKER, Deputy Director-General, Scientific & Industrial Research, presided over the Section of Mining and Metallurgy at the 38th Annual Conference of the *Institution of Engineers* held at Lucknow during 15-18 Feb. 1958.

DR. J. W. WHITAKER (President, Mining, Geological & Metallurgical Institute of India, for the current year) delivered the Presidential Address at the Annual Meeting of the Institute held in Calcutta on Feb. 8, 1958. The subject of his address was "Observations on Indian Coals."

The following research schemes have been terminated with effect from the dates mentioned against them:

1. *Cultural experiments on patchouli*—Director, Indian Institute of Science, Bangalore (Dec. 1, 1957).

2. *Study of physical properties of high polymers in relation to their molecular structure*—Dr. S. Bhagavantam, Director, Indian Institute of Science, Bangalore (Jan. 13, 1958).

3. *Development of rose oil industry in India*—Dr. D. R. Dhingra, H.B.T. Institute, Kanpur (Feb. 28, 1958).

4. *Experimental and cultural research on essential oils*—Shri A. Y. Swamy, Director, Cinchona Department, Ootacamund (Feb. 28, 1958).

5. *Experimental verification of the formulae for the estimation of alcohols and esters in synthetic mixtures and essential oils*—Dr. J. B. Lal, H.B.T. Institute, Kanpur (Feb. 28, 1958).

CSIR NEWS

A Fortnightly News Bulletin

MYSORE

MEETINGS & SYMPOSIA

A meeting of the *Publications Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi on March 19, 1958 at 2-30 P.M.

A meeting of the *Committee of the Board of Scientific & Industrial Research* will be held in the Conference Room of the CSIR Secretariat, New Delhi on March 20, 1958 at 10-30 A.M.

A meeting of the *Finance Sub-Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi on March 20, 1958 at 4-00 P.M.

The next meeting of the *Board of Scientific & Industrial Research* will be held at New Delhi on March 21, 1958 at 9-30 A.M.

The next meeting of the *Governing Body* will be held at New Delhi on March 22, 1958 at 9-30 A.M. This will be followed by the Annual General meeting of the *Society*.

Coke Oven Managers' Association, U.K.

* DR. A. LAHIRI has been nominated a member of the India Section Committee of the *Coke Oven Managers' Association, U.K.*

* DR. A. LAHIRI has been nominated a member of the Board of Editors of *Current Engineering Practice*, a technical journal published from Bombay.

* SHRI N. N. DAS GUPTA, Asstt. Director, CFRI, Jealgora, has been nominated Hony. Joint Secretary of the India Section Committee of the *Coke Oven Managers' Association, U.K.*

* DR. B. H. WADIA, Asstt. Director-in-charge, CEERI, Pilani, has been nominated CSIR representative on the *Electro-technical Division Council* of the Indian Standards Institution (I.S.I.).

* SHRI A. F. CHHAPGAR, Junior Scientific Officer, NPL, New Delhi, has been awarded the Ph.D. degree by the University of Bombay for his thesis entitled: *Ultrasonic Propagation Constants in some Homologous Series of Organic Liquids*.

* SHRI N. S. KAPUR, Junior Scientific Officer, CFTRI, Mysore, has been awarded the Ph. D. degree by the Banaras Hindu University, for his thesis: *Stereochemistry of Camphor*, and the Ph.D. degree by the Panjab University, for his thesis: *Chemical and Biochemical Changes in Foods under Processing and Storage*.

* SHRI B. K. NAYAR, Senior Scientific Assistant, NBG, Lucknow, has been elected *Fellow* of the *Linnaean Society of London*.

* SHRI R. M. PALIT has been appointed Junior Scientific Officer, CRRI, New Delhi, with effect from Jan. 25, 1958.

Personal

* PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has accepted the invitation of the Council and members of the *Institute of Indian Foundrymen* to be its patron.

* DR. J. W. WHITAKER, Deputy Director-General, Scientific & Industrial Research, has been re-elected as a Co-opted member of the Council of the *Institution of Mining Engineers, U.K.*, for the year 1958-59.

* DR. A. LAHIRI, Director, CFRI, Jealgora, has been nominated Vice-President, *Institution of Chemists (India)*, for 1958.

* DR. A. LAHIRI has been nominated overseas member of the



CFTRI, MYSORE—Sir Cluniss Ross and Mr. Butler, Chairman and Secretary of the C.S.I.R.O., Australia, discussing the improved method of parboiling of rice developed at the Institute

BRIEFS

The four-day symposium on *Recent Developments in Foundry Technology*, organised by the National Metallurgical Laboratory, Jamshedpur ended on Feb. 8, 1958. Distinguished delegates from U.K., Japan, West Germany, Belgium, Poland, Finland and Czechoslovakia and leading industrialists and technologists in the country took part in the deliberations of the symposium. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research inaugurated the symposium. Prof. Thacker also declared open the exhibition arranged on the occasion in collaboration with the *Institute of Indian Foundrymen*.

Forty-five papers bearing on raw materials for moulds and cores, recent innovations in foundry technology, new developments in melting and casting techniques, foundry mechanization, layout, management and position of foundry industry in India in the context of the Second Five-Year Plan, were presented and discussed. The titles of some of these were: (1) *The role of National Metallurgical Laboratory in research and development of Indian foundry sands and moulding materials* by Dr. B. R. Nijhawan; (2) *Production of the British Motor Corporation 'Series C' cylinder head casting* by L. W. Bolton (U.K.); (3) *Some advances in Australian foundry practice as applied in the steel industry* by F. J. Drake (Australia); (4) *Recent advances in foundry science* by F. M. Bunbury & Dr. D. V. Atterton (U.K.); (5) *Recent development of Japanese foundry industry* by Prof. H. Tanimura (Japan); (6) *Manufacture of large size castings* by S. G. Athanikar; (7) *Modern techniques for the production of heavy steel castings* by Dr. C. J. Dadswell (U.K.); (8) *High duty malleable iron* by Prof. K. Roesch (West Germany); (9) *S. G. Iron foundry technology* by D. K. Coutts & Dr. S. N. Anant Narayan; (10) *The present condition of ductile cast iron casting in Japan* by K. Tanaka (Japan); (11) *Further developments in the mechanical properties of ferritic nodular cast irons* by G. N. J. Gilbert (U.K.); (12) *Principles of risering with reference to steel castings* by P. K. Sandell; (13) *Metallurgical aspects*

and quality production of machine tools castings by B. V. Mahabale; (14) *Some aspects of modern aluminium casting* by L. Fletcher (U.K.); (15) *Present-day carbon dioxide practice in South African foundries* by John Steele; (16) *Some problems in shell moulding; the possibilities of shell cores* by A. Woods (U.S.A.); (17) *Electric furnaces* by L. G. N. Edwards; (18) *Modern melting practice in the non-ferrous foundry* by D. W. Brown (U.K.); (19) *Investment casting and some of its associated problems* by Dr. D. F. B. Tedds (U.K.); (20) *Some aspects of steel foundry sand control in India* by Dr. A. P. Bagchi; (21) *Quality control in the steel foundry* by Dr. U. K. Bhattacharya & B. K. Gupta; (22) *Foundry mechanization* by C. V. Nass (U.S.A.); (23) *Some important aspects of planning foundry layout* by N. G. Chakrabarty & S. S. Karnad; (24) *Rational modernization of foundries* by Dr. A. M. Plesinger (Czechoslovakia); (25) *Foundry industry in India* by P. K. Gupte, R. M. Krishnan & Dr. T. Banerjee; (26) *On the wear resisting property of chromium plated piston rings* by T. Takao (Japan); (27) *The use of Meehanite high duty iron castings for bridge bearings* by B. N. Baliga; and (28) *Assessment of hard coke*

requirement in India by Dr. A. Lahiri.

The Regional Research Laboratory, Hyderabad participated in the *All India Industrial Exhibition* held at Hyderabad. Samples, models and charts of new products and processes developed at the Institute were displayed. The First Prize (a Nirmalware painted plate bearing the monograph of the Industrial Exhibition Society) was awarded to the Laboratory.

A production unit for Vegetable Milk has been installed by the Central Food Technological Research Institute, Mysore at the Ramakrishna Vidyalaya, Perianaickenpalayam (near Coimbatore). The milk produced is utilized by the resident students of the Vidyalaya.

Dr. J. W. Whitaker, Deputy Director-General, Scientific & Industrial Research, who was nominated by the *Institution of Engineers* to preside over the Section of Mining and Metallurgy at the 38th Annual Conference held at Lucknow (Feb. 15-18), could not attend the conference.

PATENTS & PROCESSES

Applications Filed

63083: *A new method for the preparation of 4-hydroxycoumarins* — V. R. Shah, J. L. Bose & R. C. Shah, NCL, Poona.

63199: *A new process for the prevention of the formation of adherent scales on calandria tubes of sugar evaporators* — CECRI, Karaikudi.

Applications Accepted

57937: *Improvements in or relating to the manufacture of areo-foils* — P. Nilakantan, Wind Power Sub-Committee, New Delhi.

58909: *New foaming agents for production of foamed concrete* — G. W. Kapse & S. K. Chopra, CBRI, Roorkee.

59608: *Porous rigid filters* — S. L. Kapur & R. N. Pandya, NCL, Poona.

60120: *Improvements in or relating to shaft and bearing mecha-*

nisms — C. R. Gupta, NPL, New Delhi.

60555: *Production of liquid rubber* — Uma Shankar, NCL, Poona.

Applications Sealed

56818: *An improved process for the manufacture of vinyl chloride from ethylene dichloride* — R. K. Bhatnagar & N. R. Kuloor, Shri Ram Institute for Industrial Research, New Delhi.

57938: *Aluminising of iron and steel* — M. N. Khanna & B. R. Nijhawan, NML, Jamshedpur.

58243: *A process for the separation of sodium sulphate from mixtures of sodium sulphate and sodium chloride* — R. K. Sapre & S. D. Buch, CSRI, Bhavnagar.

58383: *A method of isolation of sapogenins* — R. N. Chakravarti & M. N. Mitra, School of Tropical Medicine, Calcutta.

RESEARCH IN PROGRESS

National Laboratories

Central Leather Research Institute, Madras

Preservation of Hides & Skins—Gammexane, when applied as a dust, has been found to provide effective protection to hides and skins against deterioration. It has no deleterious effect on subsequent tanning processes.

Central Road Research Institute, New Delhi

Road Traffic Counts—Statistical sampling techniques are being employed to cut down the cost of taking annual traffic counts required for determining the average daily traffic on a road. In the experiment suggested, traffic count is made for 10 per cent of the total number of days in a year to obtain the figure for average daily traffic. In the design of the experiment, variations due to seasons, days of the week and hours of the day have been taken into consideration. Traffic counts have been completed for the summer and the rainy seasons and counts for the winter season are in progress. The study will form the basis of a new method of estimating annual or daily average traffic in urban areas and will effect substantial saving in cost.

Central Building Research Institute, Roorkee

Apparatus for Measuring Acoustic Absorption Coefficient—An apparatus for measuring the sound absorption coefficient of building materials at normal incidence has been designed and fabricated. It consists of a 3.5 ft. long tube

(internal diam., 3.25 in.) held horizontally by uprights and clamps fixed to a base-board. At one end of the tube, a detachable iron cover is clamped on which can be mounted the test material, in the form of a disc. At the other end is placed a loudspeaker energised by a beat frequency oscillator. The open end of the microphone probe, which can slide smoothly along the axis of the standing wave tube, picks up the vibrations at each point and the microphone output is measured after amplification. From the intensity measurements of different maxima and minima, the acoustic absorption coefficient can be calculated.

Regional Research Laboratory, Hyderabad

Mineral Matter in Active Carbon—The nature of mineral matter and carbon present in Singareni coal, semi-coke and steam-activated semi-coke are under study by X-ray diffraction method.

X-ray diffraction photographs of Singareni coal, semi-coke and steam activated semi-coke were taken on the Raymax X-ray diffraction unit using the 19 cm. powder diffraction camera. The mineral matter in coal is present in the form of kaolinite and quartz, while in the semi-coke and steam-activated coke it is present as sillimanite and quartz. The unit cells of kaolinite and sillimanite have equal sizes showing that the volume of unit cell of mineral matter in coal does not alter during carbonisation and steam activation.

The volume ratio of carbon to mineral matter calculated on the basis of axial lengths and inter-axial angles of the crystals is 1:1.

Sponsored Research

Demineralisation of Indian Coals—The problem of demineralisation of Indian coals by the phase exchange method is under investigation. The investigation was carried out on coal samples from Bermo seam (East Bokaro coalfield). The samples were analysed and particle size fractions (by dry milling and wet milling and subsequent sieving) were obtained. Different types and fractions of petroleum oils were prepared and used for demineralisation using the agitator technique. Tentative phase separation experiments have been carried out using varying quantities of oil, time of contact, concentration of slurries, etc. Appreciable demineralisation takes place in fractions below -65 mesh size (Tyler's Standard Sieve), its magnitude depending on the type of oil. A diesel oil fraction with the distillation range 280-320°C. was most effective. Oils containing appreciable quantities of aromatic compounds dissolve part of the coal substance and upset the separation and hence cannot be used. Appreciable agglomeration of coal particles takes place while agglomeration of mineral particles is negligible, provided the time of contact is not too long. This has led to the conclusion that measurement of time dependency of agglomeration is of primary importance. —DR. E. WEINGAERTNER, Indian Institute of Science, Bangalore.

Travelling Wave Disturbances in the Ionosphere by Spaced Receiver Method—An improved four station method, based on observations of time displacements of fading records, has been developed for measuring ionospheric wind drifts. In this method, a fourth aerial is introduced in the east-west direction such that the four aerials occupy the corners of two adjacent and identical right-angled triangles. With this method, it has been also possible to study the nature of diffraction on the ground due to radio waves reflected from the ionosphere. For the first time, the shapes of the lines of maxima of a diffraction pattern have been delineated.

Another method of evaluating wind data is based on the assumption



CBRI, ROORKEE—Standing wave apparatus fabricated at the Institute for measuring acoustic absorption coefficient of building materials

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tion that the observed variation of velocity and direction of wind are due to varying angles of the line of maxima with respect to the direction of motion which is assumed to be fixed. The wind data determined by this method are in agreement with values obtained by taking median displacements into account. The data support Ratcliffe's assumption of varying angle of tilt over a limited range.

Records taken during April 1956 to March 1957 revealed an unusual type of splitting of F_2 reflections. A phase path recorder has been constructed and is in use for studying the type and extent of travelling disturbances — B. RAMA CHANDRA RAO, M. SRIRAMA RAO, E. BHAGIRATHA RAO & R. RAGHAVA RAO, Andhra University, Waltair.

Research Papers

RELATION BETWEEN THE URIC ACID CONTENT AND THE EXTENT OF KERNEL DAMAGE IN INSECT INFESTED GRAIN — S. Venkat Rao, R. N. Nuggehalli, S. V. Pingale, M. Swaminathan & V. Subrahmanyam, CFTRI, Mysore. *Food Science*, 6 (1957), 273.

SCREENING OF CARBOHYDRATES FOR SPORULATION OF BACILLI ON FLUID MEDIUM — S. K. Majumdar & M. C. Padma, CFTRI, Mysore. *Canad. J. Microbiol.*, 3 (1957), 640.

ROLE OF FERROUS IRON IN ENZY-MATIC TRANSAMINATION — M. V. Patwardhan, CFTRI, Mysore. *Nature. Lond.*, 181 (1958), 187.

FIELD VANE SHEAR TESTS — Dinesh Mohan & G. S. Jain, CBRI, Roorkee. *Civ. Engng, Lond.*, 52 (1957), 1387.

NEW APPROACH TO COAL CLEANING EFFICIENCY — G. G. Sarkar, CFRI, Jealgora, Min. *Engng, N.Y.*, 9 (1957), 1361.

STUDIES IN THE ESTIMATION OF PHOSPHORUS IN COAL AND COKE — A. K. Mortar, S. P. Banerjee & N. N. Chatterjee, CFRI, Jealgora. *J. Instn Chem. (India)*, 29 (1957), 302.

We regret to record the death by motor cycle accident of Dr. K. Ramachandran, Senior Scientific Officer, RRL, Hyderabad, on Feb. 1, 1958.

Applications are invited for the undermentioned posts. Particulars and application forms may be obtained from the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Requests for forms must specify the details of the post.

The posts carry allowances permissible under the Government of India rules. Higher initial start can be given to well-qualified and experienced candidates.

Application forms duly filled in and accompanied by crossed Indian postal order for Rs. 7.50 (Rs. 1.87 only for scheduled castes/tribes and other backward classes) as application fee should be sent to the Secretary, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2. Number of advertisement and the post applied for must be indicated at the top of the application form. Persons in employment should apply through proper channel. A separate application with separate fee is required for each post.

NATIONAL METALLURGICAL LABORATORY, JAMSHEDPUR

(Advertisement No. 9/58)

Junior Scientific Officer : Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS : Good qualifications in metallurgy with adequate research experience in metallography, heat treatment of metals and alloys and practical training in metallurgical works. Should also be conversant with latest metallurgical research techniques.

Last date for the receipt of applications, **March 15, 1958.**

BIRLA INDUSTRIAL & TECHNOLOGICAL MUSEUM, CALCUTTA

(Advertisement No. 9/58)

1. Senior Scientific Officer : Grade II : Scale of pay, Rs. 350—30/2—410—30—590—EB.—30—770—40—850.

QUALIFICATIONS : High qualifications in electrical communication engineering or in radio physics and electronics with adequate experience in designing electronic equipment. Experience in model making desirable.

2. Commercial Artist : Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS : Adequate knowledge and experience in laying out exhibition or museum displays and capable of producing original designs. Diploma in commercial art from a recognised institute. Qualifications relaxable in case of commercial artists with advertising background.

Last date for the receipt of applications, **March 15, 1958.**

CENTRAL ELECTRO-CHEMICAL RESEARCH INSTITUTE, KARAİKUDI

(Advertisement No. 9/58)

Junior Scientific Officer : Scale of pay, Rs. 275—25—500—EB—30—590.

QUALIFICATIONS : High qualifications in chemistry with good record of research work, preferably in physical chemistry. Ability to write on technical and scientific subjects with clarity and elegance. Knowledge of German, French or Russian and experience in preparing survey and reviews of scientific problems. Selected candidate will be required to work as P. A. (Tech.) to Director.

Last date for the receipt of applications, **March 15, 1958.**

RESEARCH FELLOWSHIPS

Applications are invited for Senior and Junior Research Fellowships under the Council of Scientific & Industrial Research. These Fellowships are tenable in research laboratories of universities colleges and other recognised institutions in the country.

Applicants may indicate the subject in which they would prefer to work.

Senior Research Fellowships

QUALIFICATIONS : Post-graduate training in the methods of research. Aptitude for original and independent research with promise of becoming leaders of scientific thought. Holders of Ph.D. degree, who have decided to take science as a career will be given preference. **Age :** Preferably between 23 to 27 years on April 1, 1958.

Amount of Award : Rs. 400 p.m. fixed (this may be raised to Rs. 500 p.m. in the case of certain fields of engineering). **Period :** 2 years with possible extension to a third year.

Junior Research Fellowships

QUALIFICATIONS : Masters' degree in science or Bachelor's degree in technology or engineering or equivalent qualifications. Aptitude to benefit from full time training in methods of scientific research. Preference will be given to candidates holding first class degree. **Age :** Preferably below 24 years on April 1, 1958.

Amount of Award : Rs. 200 p.m. fixed (Rs. 300 in case of certain fields of engineering).

Application forms and terms and conditions of the fellowships are obtainable on payment of Re. 1 in the form of a crossed Indian Postal Order payable to the Secretary, Council of Scientific & Industrial Research. Completed applications accompanied by a fee of Rs. 6.50 (Rs. 1.87 for scheduled caste and tribes) in the form of a crossed Postal Order should reach the Secretary, C.S.I.R., New Delhi by **March 31, 1958.**

FORM IV

(See Rule 8)

1. Place of Publication

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2. Periodicity of its publication

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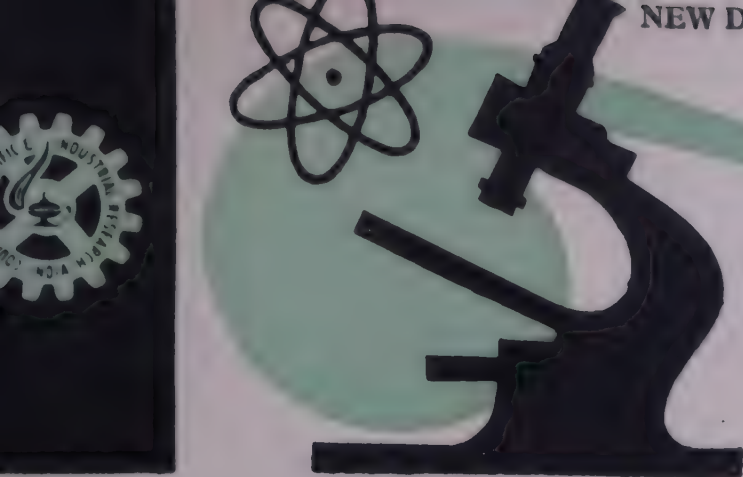
6. Names and addresses of individuals who own the newspaper and partners or shareholders holding more than one per cent of the total capital.

Council of Scientific & Industrial Research,
Old Mill Road, New Delhi-2

I, B. N. Sastri, hereby declare that the particulars given above are true to the best of my knowledge and belief.

March 8, 1958

(Sd). B. N. SASTRI
Signature of Publisher



CSIR NEWS

A Fortnightly News Bulletin



GOVERNING BODY APPROVES NEW PILOT PLANT PROJECTS

The Governing Body of the Council of Scientific & Industrial Research met on March 22, 1958 in New Delhi. The Prime Minister, Shri Jawaharlal Nehru presided.

The meeting passed a resolution, moved by the Prime Minister, condoling the demise of Maulana Abul Kalam Azad, who was the Vice-President of the Council.

Pilot Plant Projects

The following pilot plant projects were approved: Manufacture of enzyme bates, tannin extracts, leather boards and leather auxiliaries at the Central Leather Research Institute, Madras; Production of sodium sulphate at Sambhar; and Utilisation of cation-exchange resin from cashewnut shell at the National Chemical Laboratory, Poona.

A project for the manufacture of rice bran oil at the Central Food Technological Research Institute, Mysore was approved. Studies carried out at the Institute have provided basic data for pilot plant studies. Rice bran contains about 14 per cent oil of edible quality, and its production would greatly augment the vegetable oil supplies in the country.

The Governing Body approved of the establishment of a 'foundry cell' at the National Metallurgical Laboratory for rendering technical assistance to small-scale foundries.

Monographs on Indian Botany

The publication of monographs on Indian botany, based on researches carried out in India was approved. The project envisages the preparation of nearly twenty-five monographs by specialists in two years. An Editorial Board with Dr. M. S. Randhawa as Chairman, and the following members,

was constituted: Prof. P. Maheswari, Dr. A. C. Joshi, Dr. B. P. Pal, Shri B. N. Sastri and Dr. U. N. Chatterji.

Symposia

The Governing Body approved the holding of the following symposia during 1958-59:

1. *Iron and steel industry in India*—National Metallurgical Laboratory, Jamshedpur.
2. *Nature of coal*—Central Fuel Research Institute, Jealgora.
3. *Minor batch constituents in glass melting*—Central Glass & Ceramic Research Institute, Calcutta.
4. *Plant and equipment in food industries*—Central Food Technological Research Institute, Mysore.

(Contd. on p. 2, col. 3)

PRIME MINISTER VISITS NML

The Prime Minister, Shri Jawaharlal Nehru, visited the National Metallurgical Laboratory, Jamshedpur on March 2, 1958. He was accompanied by Dr. Zakir Hussain, Shri Morarji Desai, Sardar Swaran Singh, Shri J. R. D. Tata and Shri J. J. Ghandy.

Dr. B. R. Nijhawan, Director of the Laboratory showed the Prime Minister and party different products and processes developed at the Laboratory and the actual operations in the production of 'Thackeron' stainless steels, electrolytic manganese and manganese dioxide, carbon and clay bonded graphite crucibles, L.D. steel making and new nickel-free manganese based coinage alloys and coins.

The Prime Minister evinced keen interest in the work of the Laboratory and expressed his appreciation of its achievements in different fields.



NML, JAMSHEDPUR---Dr. B.R. Nijhawan, Director explaining to the Prime Minister various processes developed at the Laboratory

SCIENCE AND HUMAN VALUES

Prof. Thacker's Convocation Address

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, addressed the Convocation of the Kerala University held in Trivandrum on March 15, 1958.

In his address, Prof. Thacker referred to the challenging trends of technology in the present age. He pointed out that though some have expressed doubt and dismay at the direction and pace of some recent technological developments, the prospects for harnessing science only for human betterment are undoubted. "By virtue of its solidity and its rational directed approach, science holds promise to solve every material problem facing mankind. However, the technological powers of science are likely to prove a curse without reference to human needs and human values." Continuing, he pointed out: "The dichotomy of science and humanities is not calculated to contribute to the development of a self-reliant and self-expressive personality; nor for that matter, the fragmentation of science and the intensive specialization towards which education is, at present, tending. Education must inculcate a clear appreciation of the limitations and boundaries of science, and lead to the emergence of a society fully receptive to progressive ideas and appreciative of human values, but intolerant of whatever is illogical and fallacious. It is to this end that we should address ourselves".

Prof. Thacker exhorted the graduates of the year "to impart the knowledge they have acquired to those around them, thereby contributing their mite to the emergence of an informed and forward-looking society. Such a society will not only absorb new waves of knowledge, but also stimulate and encourage the cultivation of new knowledge". In conclusion, he pointed out that the economic development of the enchanting state of Kerala should be their first concern. Those who have had the good fortune of obtaining university education have the responsibility of carrying the torch of learning and eliminating the darkness which thwarts progress. The building up of an informed and dynamic society needs their understanding

efforts and in this noble educational task, he wished them godspeed.

CELLULOSE RESEARCH

A symposium on *Cellulose Research*, organised by the Cellulose Research Committee of CSIR was held at the Forest Research Institute and Colleges, Dehra Dun from Feb. 27 to March 1, 1958. More than 70 research scientists participated in the Symposium. Shri R. N. Datta, President, Forest Research Institute and Colleges, during his welcome address, traced the development of the paper industry in the country and the Institute's contribution towards it. Dr. Vikram A. Sarabhai, Chairman, Cellulose Research Committee in his Opening Address emphasized the important role played by cellulose industries, such as cotton, jute textiles, pulp and paper and rayon, in the economy of the country.

Twenty-nine papers bearing on cellulose and cellulose-based industries were presented and discussed in four sessions. The first session, presided over by Dr. M. K. Sen of the Indian Jute Mills' Association Research Institute, Calcutta, was devoted to papers on the "Structure and Physical Properties of Cellulose". Ten papers were presented and discussed at this session.

Dr. K. Venkataraman, Director, NCL, Poona, presided over the second and third sessions which dealt with "Chemistry and Chemical Technology of Cellulose" and "Chemical Pulp in relation to the Rayon Industry and Chemical Technology of Cellulose" respectively. In his Introductory Remarks, Dr. Venkataraman discussed the "Reactivity of Cellulose to Dyestuffs". Twelve papers were presented and discussed at these sessions.

The fourth session was devoted to "Mechanical Pulp with special reference to the Paper Industry". Dr. R. V. Bhat of the Forest Research Institute and Colleges, who presided over this session, discussed the "Modern trends in Pulp and Paper Manufacture". Seven papers were presented and discussed at this session.

The symposium on *Equipment for Food Industries* announced (CSIR News, Vol. 8, No. 4, p. 4) will be held at CFTRI, Mysore from April 5 - 8, 1958.

I.G.Y. News Letter

The Indian National Committee for the International Geophysical Year (IGY) has started issuing from January 1958 a news bulletin entitled 'I.G.Y. News Letter' intended to provide IGY news of interest to the Indian Stations participating in the IGY and to interested persons and organizations. The bulletin is prepared and issued by Dr. A. P. Mitra, Secretary of the Committee. The first News Letter (No. 1) was issued on Jan. 15 and the second (No. 2) on March 11. Copies of the News Letter are available on request from Dr. A. P. Mitra, Secretary, Indian National Committee for the IGY, National Physical Laboratory, New Delhi-12.

The *Foundation Day* of the Central Building Research Institute, Roorkee was celebrated on Feb. 7-8, 1958.

SYMPOSIA APPROVED

(Contd. from p. 1, col. 2)

5. *Chemotherapy in bacterial and viral infections*—Central Drug Research Institute, Lucknow.
6. *Electrolytic cells*—Central Electro-Chemical Research Institute, Karaikudi.
7. *Tanning as a small-scale and cottage-scale industry*—Central Leather Research Institute, Madras.
8. *Cottonseed and its products*—Regional Research Laboratory, Hyderabad.
9. *Cellulose research*—Chemical Research Committee.
10. *Microwave spectroscopy and magnetic resonance*—Physical Research Committee, in collaboration with the Department of Atomic Energy.
11. *Aerials*—Radio Research Committee.

The Society of the Council which met on March 22, 1958 approved the administration report for 1957-58 and the audited statement of accounts for 1956-57.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory, Jamshedpur

Nickel-free Coinage Alloys—Experiments on the replacement of nickel by manganese in coinage alloys have resulted in the development of nickel-free coinage alloys. The alloys have good flowability, ductility, brightness, shine and ring and faithfulness in reproduction of embossed impression.

The Government of India Mint have produced beautifully finished coins utilizing these alloys and confirmed the findings of the Laboratory studies.

Up-grading of Magnetite—Beneficiation of low-grade magnetite (assaying Fe, 36.5; SiO_2 , 44.2 per cent) from Salem (Madras) has been attempted in order to obtain concentrates rich in Iron.

Wet magnetic separation of ore at -48 and -65 mesh sizes yielded magnetic concentrate assaying 62.5 and 64.3 per cent iron and 11.1 and 9.6 per cent SiO_2 respectively with an iron recovery of about 88 per cent. Dry magnetic separation at -10 mesh followed by wet magnetic separation of the rougher concentrate at -48 mesh produced a final concentrate assaying 61.98 per cent Fe and 12.1 per cent SiO_2 with an iron recovery of 36.5 per cent. Tabling the ore at -48 mesh gave a concentrate assaying 65.21 per cent Fe and 8.8 per cent SiO_2

with an overall recovery of 82.8 per cent Fe, but higher recovery could be obtained at the expense of grade.

Pilot plant tests were carried out with the ore employing tabling as well as wet magnetic separation. Tabling the sample yielded a concentrate assaying 67.0 per cent Fe and 5.56 per cent SiO_2 with an iron recovery of 77.6 per cent. A single pass of the ore through the wet magnetic separator yielded a magnetic product assaying 62.10 per cent Fe and 13.2 per cent SiO_2 with a recovery of 81.2 per cent iron in the product.

Central Food Technological Research Institute, Mysore

Vacuum Tester—The shelf-life of canned foods depends to a great extent upon the degree of vacuum inside the can. The internal vacuum of cans is usually measured by puncturing them with a small vacuum gauge, but in such a testing procedure, a large number of cans are required to be tested and have to be discarded later. If cans can be tested for vacuum without puncturing, considerable saving in money could be effected.

A compact, easily portable and easy to operate instrument has been designed for this purpose by means of which the vacuum in cans of all sizes (202 to 603 size) containing processed foods like fruit and

vegetable products, meat, fish, dairy products and beverages can be determined. The test takes less than a minute. The instrument can also be used to detect faulty or leaky cans and hydrogen or carbon dioxide swells in cans at an early stage of formation.

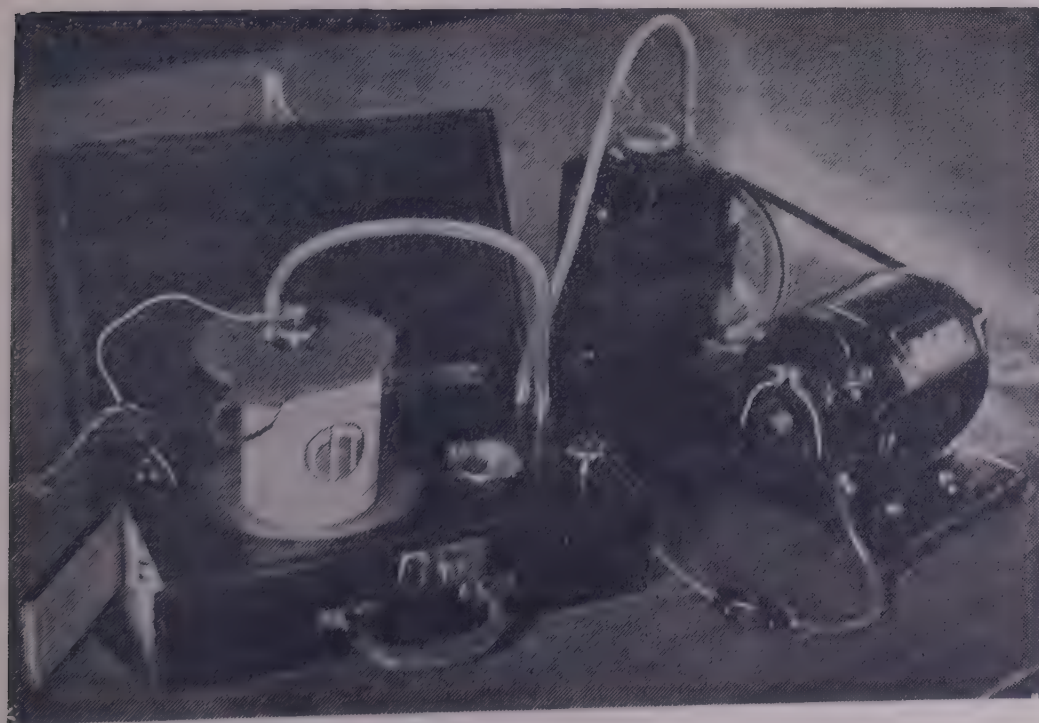
Central Fuel Research Institute, Jealgora

Ammonium Humate—An economic single stage process for the production of ammonium humate—a soil conditioner and fertilizer—at atmospheric pressure has been developed. In this process, air laden with ammonia enters through the bottom of an externally heated steel column containing low rank powdered coal.

Sponsored Research

Mode of Action of Tetracycline Antibiotics—The effect of incorporating terramycin in the diet of animals on their nutrition has been studied. Terramycin added to a basal rice-Bengal gram diet improves the growth of weanling rats which is further enhanced by the addition of pteroyl glutamic acid (PGA) and vitamin B_{12} . This indicates that terramycin spares the requirement of the amino acids, methionine, tryptophan which is in turn influenced by PGA and vitamin B_{12} . The simultaneous increase in nitrogen levels of the liver may be due either to better availability of amino nitrogen or to increased availability of vitamin B_{12} (reflected by increased level of vitamin B_{12} in liver), or due to both. Terramycin feeding also causes increased levels of riboflavin and choline in liver, and of choline in plasma.

The effect of terramycin on protein metabolism, i.e., protein fasting and regeneration, was studied by pair-feeding rats on a basal low methionine low choline diet with those receiving terramycin and also pair-feeding rats receiving PGA and vitamin B_{12} with those receiving the diet and the antibiotic. In both the sets terramycin causes an improvement in growth and nitrogen utilization. — A. SREENIVASAN & D. V. TAMHANE, Department of Chemical Technology, Bombay University, Bombay.



CFTRI, MYSORE---Vacuum tester for canned foods fabricated at the Institute

NEW RESEARCH SCHEMES SANCTIONED

On the recommendation of its Advisory Board, the Governing Body of the Council have sanctioned the following new research schemes:

1. Establishment of a systematic mycology unit of wood destroying fungi—Dr. S. R. Bose, Medical College, Calcutta.
2. Phase converter—Rotary & Static—Shri M. Maria Louis, P.S.G. College of Technology, Coimbatore.
3. Moisture balance problems in micrometeorology—Shri P. V. Subrahmanyam, Andhra University, Waltair.
- 4 & 5. Marine geology; Some aspects of nuclear geology—Prof. C. Mahadevan, Andhra University, Waltair.
6. Mechanism of vulcanisation of rubber—Dr. D. Banerjee & Dr. A. K. Sircar, Indian Association for the Cultivation of Science, Calcutta.
7. Silicones and organic titanates—Dr. M. R. A. Rao, Indian Institute of Science, Bangalore.
8. Mechanism of experimental hyper-cholesterolaemia—Dr. D. P. Sadhu, Bengal Veterinary College, Calcutta.
9. Large scale production of 'Mycobacillin'—a new antifungal antibiotic—Dr. S. K. Bose, University College of Science & Technology, Calcutta.
10. Comparison of chemistry of normal chromosomes with those of malignant cells—Dr. A. K. Sharma, Calcutta University, Calcutta.
11. Role of 'Amul' infant food in the electrolytes and on the protein pattern of the body fluids in infants and children—Dr. A. C. Majumdar, Institute of Child Health, Calcutta.
- 12 & 13. Genetical and biochemical studies of induced mutants of fungi and actinomycetes; Isolation in pure state of organic compounds of biological importance including antibiotics—Dr. P. N. Nandi, Bose Institute, Calcutta.
14. Metabolism of oxalic acid in plants and animals—Dr. P. S. Krishnan, Lucknow University, Lucknow.
15. Biosynthesis of cholesterol from acetate- $I-C^{14}$ in vitro—Dr. S.

Mukerjee, University College of Science, Calcutta.

16. Studies on vitamin B_{12} in relation to the metabolism of some microorganisms—Dr. S. C. Roy, University College of Science, Calcutta.

17. Studies on visual pigments—Dr. H. R. Cama, Indian Institute of Science, Bangalore.

18. Studies in metabolic antagonism with special reference to tryptophan—Dr. A. R. Kidwai, Muslim University, Aligarh.

19. Allometric growth in the Indian freshwater prawns of the genus *Palaemon*—Dr. R. K. Misra, Saugar University, Saugar.

20. Problems of fish culture in the Delhi State—Dr. (Miss) M. Chandy, Delhi University, Delhi.

21. Monographic study of *Cyperus esculentus*—Dr. V. Puri, Meerut College, Meerut.

22. Respiratory activity of the germinating rice embryo under different oxygen tensions and its relation to the auxin balance of the grain—Dr. S. M. Sircar, Calcutta University, Calcutta.

23. Phylogeny and comparative cytogenetics of some Indian crop plants (maize and cajanus)—Prof. S. P. Agharkar, Maharashtra Association for the Cultivation of Science, Poona.

24. Physiology of fruit growth—Dr. B. M. Johri, Delhi University, Delhi.

25. Botanical survey of Mahableshwar and of the Dangs Forest—Father H. Santapau, St. Xavier's College, Bombay.

26. Quantitative cytochemistry of human and other parasitic protozoa by the interference and phase contrast microscopy—Dr. H. N. Ray, School of Tropical Medicine, Calcutta.

27. Pollen analysis of the quaternary deposits of Kashmir—Dr. R. N. Lakhanpal, Birbal Sahni Institute of Palaeobotany, Lucknow.

28. Investigation connected with explorations for remains of early man in India—Sarvashri A. P. Khatri & K. D. Banerjee, Deccan College, Poona.

29. Nuclear Geophysics and Geology: Studies on the application of nuclear phenomena to problems relating to earth sciences—Dr. R. S. Krishnan, Indian Institute of Science, Bangalore.

30 & 31. Fixing suitable specifications for assessing the suitability of different soils for brick burning; Fundamental study of the interaction between soils and well-known stabilizers such as calcium chloride, sodium silicate, cement, etc.—Dr. A. N. Puri, Field Research Station, Bombay.

32. Study of clay mineralogy and stabilization of Indian soils in the aspect of soils mechanics—Prof. A. K. Bhattacharya, Agra College, Agra.

33. Test requirements for cable impregnating compounds for microbe aggressions and temperature effects—Prof. B. J. Badkas, Indian Institute of Science, Bangalore.

Personal

*SHRI P. N. KATHJU, Officer on Special Duty at Jaipur, has been appointed Industrial Liaison Officer with effect from March 1, 1958. Shri Kathju will be incharge of the regions covered by the States of Punjab, Rajasthan, Madhya Pradesh and Uttar Pradesh with headquarters at Jaipur.

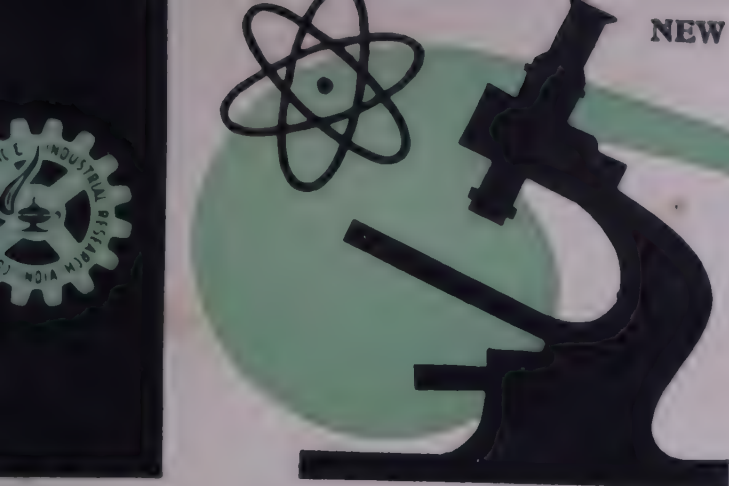
*SHRI S. BAGCHI has been appointed Assistant Director, CMRS, Dhanbad, with effect from March 10, 1958.

*DR. P. K. BANERJEE has been appointed, on promotion, Senior Scientific Officer: Grade II, CFRI, Jealgora, with effect from Jan. 20, 1958.

*SHRI B. K. SARIN has been appointed, on promotion, Senior Scientific Officer: Grade II, CFRI, Jealgora, with effect from Jan. 20, 1958.

*SHRI S. K. MAZUMDAR has been appointed, on promotion, Senior Scientific Officer: Grade II, CFRI, Jealgora, with effect from Jan. 20, 1958.

*SHRI A. K. MUKHERJEE has been appointed, on promotion, Senior Scientific Officer: Grade II, CFRI, Jealgora, with effect from Jan. 20, 1958.



CSIR NEWS

A Fortnightly News-Bulletin

MICA BRICKS PRODUCED BY CGCRI PROCESS

A new industry in India, for manufacturing heat-insulating mica bricks by a process developed at the Central Glass & Ceramic Research Institute, has been established. The factory at Bhilwara (Rajasthan) of Messrs. Bhopal Mining Works was formally declared open by Shri M. M. Shah, Union Minister for Industries on Saturday, March 29, 1958. The plant for the production of bricks was designed by the Institute and fabricated by Messrs. Western Engineering Co., Calcutta.

Heat insulating bricks are used as baking material in the construction of industrial furnaces.

India's annual requirements, estimated to be of the value of over Rs. 20 lakhs, were being hitherto met by the import of vermiculite bricks.

The factory at Bhilwara utilizes scrap or waste mica of the Indian mica industry.

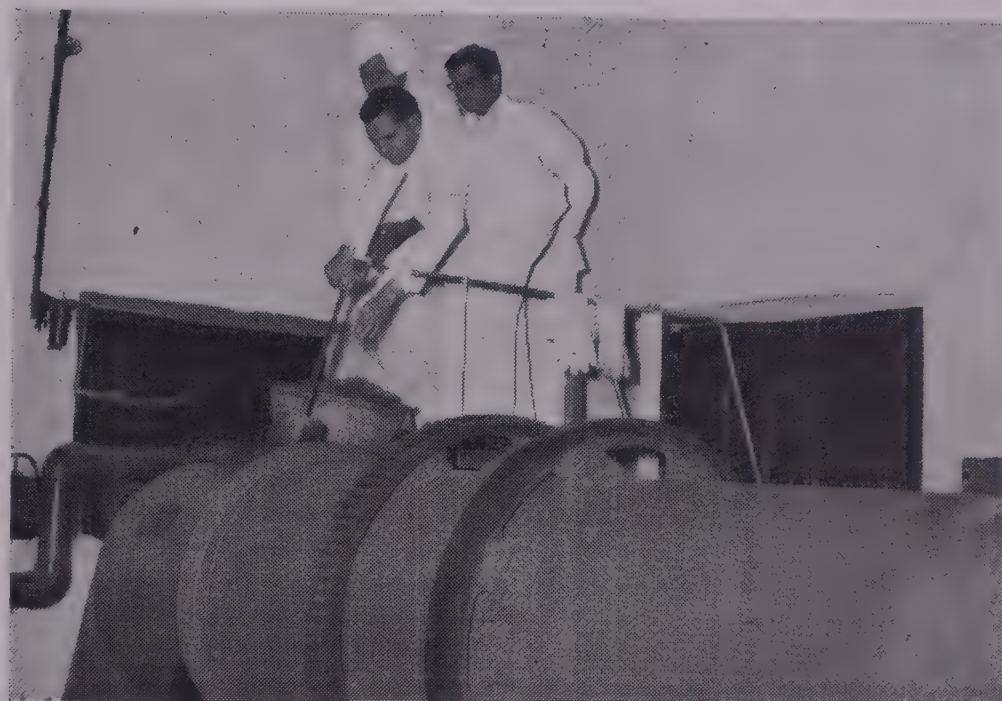
The present output of the factory is nearly 3,000 bricks (about 3 tons) per day. The output is expected to be raised to 6,000 bricks per day by the end of the current year.

Personal

*DR. S. C. BHATTACHARYA has been appointed, on promotion, Asst. Director, NCL, Poona, with effect from March 14, 1958.

*DR. M. PANCHOLY has been appointed, on promotion, Senior Scientific Officer: Grade I, NPL, New Delhi, with effect from Nov. 15, 1957.

*SHRI T. V. RAMAMURTI has been appointed, on promotion, Senior Scientific Officer: Grade I, NPL, New Delhi, with effect from Nov. 15, 1957.



The Mica Bricks factory at Bhilwara was declared open by Shri M.M. Shah. Picture shows Shri M.M. Shah pouring waste mica into rotary kiln for calcining.

*SHRI M. R. VERMA has been appointed, on promotion, Senior Scientific Officer: Grade I, NPL, New Delhi, with effect from Nov. 15, 1957.

*SHRI C. V. GANAFATHY has been appointed, on promotion, Senior Scientific Officer: Grade I, NPL, New Delhi, with effect from Nov. 15, 1957.

*SHRI R. K. TANDON has been appointed, on promotion, Senior Scientific Officer: Grade I, NPL, New Delhi, with effect from Nov. 15, 1957.

*DR. B. D. SAXENA has been appointed, on promotion, Senior Scientific Officer: Grade I, NPL, New Delhi, with effect from Nov. 15, 1957.

*DR. B. C. KAR has been appointed, on promotion, Senior

Scientific Officer: Grade I, NML, Jamshedpur, with effect from Nov. 15, 1957.

*SHRI P. K. GUPTA has been appointed, on promotion, Senior Scientific Officer: Grade I, NML, Jamshedpur, with effect from Nov. 15, 1957.

*SHRI D. S. JOHAR has been appointed, on promotion, Senior Scientific Officer: Grade I, CFTRI, Mysore, with effect from Nov. 15, 1957.

*DR. P. B. MATHUR has been appointed, on promotion, Senior Scientific Officer: Grade I, CFTRI, Mysore, with effect from Nov. 15, 1957.

*DR. G. S. SIDDAPPA has been appointed, on promotion, Senior Scientific Officer: Grade I, CFTRI, Mysore, with effect from Nov. 15, 1957.

(Contd. on p. 6, col. 3)

LEATHER AUXILIARIES

A symposium on *Leather Auxiliaries* was held at the Central Leather Research Institute, Madras from 14-17 March, 1958. The symposium was inaugurated by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research; Shri Bishnuram Medhi, Governor of Madras, presided over the inaugural session. Over 180 delegates from all over India representing technologists, traders, tanners and manufacturers took part in the deliberations of the symposium. Distinguished delegates from U.S.S.R. and Philippines participated in the symposium. Sixty-two papers were presented and discussed in the course of five technical sessions.

In the first technical session, the following 13 papers bearing on pre-tanning operations, auxiliaries used therein, the scope of use of the auxiliaries and the prospects for the relevant industries were read and discussed: Studies on *khari* salt; Assessment of the utility of certain commercial samples of lime; Possibility of the use of barium sulphide as a substitute for sodium sulphide in tanning industry; Preparation of sodium hydro-sulphide; Enzyme bates and depilants for leather manufacture; Production of enzyme bates and their uses; Application of versene for determination of calcium and magnesium in salts used for curing hides and skins; Instrumental methods for assessment of leather auxiliaries; Influence of different tanning auxiliaries on the swelling of hide protein; Leather auxiliaries and their uses in leather manufacture; Problems facing the leather auxiliary industry in India; Leather and other allied industries in the new Mysore State.

Twelve papers presented in the second session dealt with tanning agents; Bagasse reduced basic chrome liquors; Glycerol reduced chrome liquors; Chromatographic separation of organic acids on paper; Paper chromatographic investigations of chrome liquors; Neutralisation of chrome leather; Aluminium tanning salts and their application in processing of leather; Syntans as auxiliaries in leather manufacture; Synthetic tanning materials and their importance for vegetable tanned leather industry in India; Hexamethylene tetramine phenol complexes in tanning; Use of indigenous tanstuffs for chrome

retan leathers; and Surface charge of chrome tanned leather and effect of organic acids on it.

Fourteen papers covering preparation of tanning extracts utilizing indigenous materials and waste products were presented in the third session: Potentiality for the manufacture and use of tanning extracts from indigenous tanning materials; Problems confronting tannin extract manufacturers in India; *Babul* bark and possibilities of manufacture of its extract; Evaluation of properties of natural tannins by means of fractional tanning; Need to change over to vegetable tannin extracts; Rapid sole leather tannage using wattle substitutes; Some recent developments in South Africa on rot-resistant insole leathers; Impregnation of sole leather; New tanning materials; Theoretical considerations pertaining to the modification of lignin sulphonates for tanning purposes; Assessment of tanning potentiality of some modified lignosulphonates; Flavogallol—a constituent of the tannin from pomegranate rind; and Survey of indigenous tanning materials—*kahua* bark.

Important auxiliaries of the post-tanning operations were the sub-

jects of 13 papers presented and discussed at the fourth technical session: Synthetic products for leather greasing and fat liquoring, their composition, properties and application; Petroleum products for the leather industry; Surface active materials as auxiliaries in leather industry; Emulsifiers for use in leather industry; Sulphated oils and their use on leathers; Sulphonation; Indigenous fish oil for the tanner; Use of modified sugarcane wax in leather polishing compositions; Natural latex-based adhesive for leather; Coated abrasives in leather and shoe industries; Comparative study of the mechanical properties of chrome retan upper leathers; and Application of quality control to leather research and industry.

The concluding session was concerned with leather finishes. Six papers bearing on these subjects were presented and discussed; Pigment finishes for leather; Manufacture of water pigment finishes for leather and its prospects in India; Resin emulsions, finishing auxiliaries; Leather finishes; Alkyd resin finishes; A review of some important binders—natural & synthetic; and Types & uses of nitrocellulose solvents and diluents.

CELLULOSE RESEARCH—Proceedings of the 1957 Symposium Published

The proceedings of the symposium on *Cellulose Research* held under the auspices of the Cellulose Research Committee of CSIR at ATIRA, Ahmedabad from Feb. 4-6, 1957 have been published.

The 150-page publication contains an introductory paper and 18 technical papers arranged under the following heads: Structure and mechanical properties of cellulose; Chemistry of cellulose; Pulp and paper; Rayon; and Jute. The introductory paper traces the progress of cellulose research in India, with particular reference to research sponsored by the Cellulose Research Committee, suggests various ways for the promotion of research in certain defined fields and discusses the present position of cellulose industries in India and the possibilities for their development. The other papers deal with some problems on structure and mechanical properties of cellulose fibres; relation between molecular

orientation and mechanical behaviour of mercerized cotton fibres; light scattering studies on cellulose solutions in concentrated acids; formation of cellulose nitrate from cellulose; alkali sensitive linkages in irradiated cellulose; hydrated oxides as barriers against cellulose degradation by ultra-violet irradiation; reaction of cellulose with cross linking agents; chemical modification of textile cellulose; anatomical studies of indigenous hardwoods with special reference to their suitability for paper pulp; chemical analysis of bamboo tissues; preliminary study of optimum digestion condition for strong bamboo pulp production; evaluation of viscose grade pulp; requirement of dissolving pulp for the Indian rayon industry; anti-crease and anti-shrink finishes for viscose rayons; research problems and chemistry of jute cellulose; and isolation and mode of association of jute alpha-cellulose with other sugar residues.

EXECUTIVE COUNCILS OF NATIONAL LABORATORIES RECONSTITUTED

In accordance with the earlier decision of the Governing Body, the Executive Councils and the Scientific Advisory Committees of national laboratories/institutes have been merged. The President, CSIR, has reconstituted the Executive Councils of the national laboratories/institutes.

National Physical Laboratory, New Delhi—Minister for Commerce and Industry (*Chairman*); Shri Charat Ram; Dr. H. J. Bhabha; Dr. D. S. Kothari; Dr. Vikram A. Sarabhai; Dr. S. Bhagwantam; Industrial Adviser (Engineering), Ministry of Commerce and Industry; Director, Indian Standards Institution; Shri S. L. Kirloskar; Prof. S. N. Bose; Dr. K. R. Ramathan; Dr. M. B. Sarwate; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, NPL (*Members*).

National Chemical Laboratory, Poona—Shri Manubhai Shah (*Chairman*); Dr. A. Nagaraja Rao; Shri P. A. Narielwala; Dr. M. D. Parekh; Dr. K. A. Hamied; Shri S. P. Sen; Dr. B. P. Godrej; Dr. D. K. Banerjee; Shri Charat Ram; President, Rubber Research Association; Representative of the Defence Science Organisation, Ministry of Defence; Representative of the Department of Atomic Energy; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, NCL (*Members*).

National Metallurgical Laboratory, Jamshedpur—Shri J. J. Ghandy (*Chairman*); Shri Ajaib Singh; Dr. G. P. Chatterji; Director, Geological Survey of India; Representative of the Ministry of Steel, Mines and Fuel; Shri J. G. Berry; Shri P. H. Kutar; Shri P. R. Kamani; Representative of the Department of Atomic Energy; Director-General of Supplies and Disposals, Ministry of Works, Housing and Supply; Industrial Adviser (Engineering), Ministry of Commerce and Industry; Dr. R. S. Krishnan; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, NML (*Members*).

Central Fuel Research Institute, Jealgora—Minister for Steel, Mines

and Fuel (*Chairman*); Shri D. C. Driver; Shri S. C. Ghosh; Chairman, Coal Board; Dr. M. S. Krishnan; Member (Engineering), Railway Board; Shri K. B. Sen; Shri A. B. Guha; Shri K. K. Sahni; Representative of the Department of Atomic Energy; Member (Power), Central Water & Power Commission; Dr. G. P. Kane; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CFRI (*Members*).

Central Glass & Ceramic Research Institute, Calcutta—Lala Shri Ram (*Chairman*); Dr. G. N. Ramachandran; Shri C. P. Shah; Shri D. N. Sen; Lt. Col. D. N. Bhattacharya; Shri R. D. Chandorkar; Shri M. G. Bhagat; Shri K. B. Sen; Representative of the Department of Atomic Energy; Dr. J. N. Mukerji; Director, Geological Survey of India; Chief Industrial Adviser, Ministry of Commerce and Industry; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CGCRI (*Members*).

Central Food Technological Research Institute, Mysore—Chief Minister for Mysore State (*Chairman*); Shri K. K. Birla; Dr. B. C. Guha; Dr. A. Sreenivasan; Dr. V. N. Patwardhan; Representative of the Ministry of Food and Agriculture; Chief Industrial Adviser, Ministry of Commerce and Industry; Representative of the Biscuit and Confectionery Industry; Shri Chinubhai Manibhai; Representative of the All India Food Preserver's Association; Prof. T. R. Seshadri; Representative of the Ministry of Community Development; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CFTRI (*Members*).

Central Drug Research Institute, Lucknow—Dr. Jivraj N. Mehta (*Chairman*); Dean, Faculty of Medicine, Lucknow University; Dr. J. C. Patel; Dr. C. G. Pandit; Dr. K. A. Hamied; Shri S. P. Sen; Col. R. N. Chopra; Dr. R. N. Choudhury; Maj.-Gen. S. S. Sokhey; Director-General, Health Services; Dr. A. H. Amin; Dr. B. P. Pal; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CDRI (*Members*).

Central Electro-chemical Research Institute, Karaikudi—Shri C. Subramanian (*Chairman*); Director, Indian Institute of Science; Dr. Jagdish Shanker; Shri M. B. Bhagwat; Shri S. Ramaswami; Dr. G. P. Kane; Dr. S. R. Palit; Shri M. P. Birla; Dr. S. K. Bhattacharya; Prof. G. N. Ramachandran; Dr. N. Anjaneyulu, Representative of the Defence Science Organisation; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CECRI (*Members*).

Central Leather Research Institute, Madras—Dr. A. Lakshmanaswami Mudaliar (*Chairman*); President, Tanners' Federation; Representatives of the South India Hides & Skins Merchants Association; Shri A. J. Sharman; Shri S. P. Pandit; Chief Industrial Adviser, Ministry of Commerce and Industry; Dr. K. V. Giri; Shri Moni Banerji; Shri John Bartos; Representative of the Ministry of Community Development; Raja Sir Muthiah Chettiar of Chettinad; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CLRI (*Members*).

Central Building Research Institute, Roorkee—Minister for Works, Housing and Supply (*Chairman*); Shri K. F. Antia; Chief Engineer (Buildings), CPWD; President, Forest Research Institute & Colleges; Shri A. N. Khosla; Director, National Buildings Organisation; Chief Engineers from States dealing with problems of construction and development of buildings; Dr. P. K. Kitchlu; Representative of the Ministry of Community Development; Dr. S. K. Joglekar; Dr. P. S. Lokanathan; Dr. P. K. Ghosh; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CBRI (*Members*).

Central Road Research Institute, New Delhi—Minister for Transport (*Chairman*); Consulting Engineer, Ministry of Transport; Chief Engineers from States dealing with construction and development of roads and highways; President, Indian Roads Congress; Dr. R. R. Hathiagadi; Shri C. J. Fielder;

Dr. K. L. Rao; Representative of the Ministry of Community Development; Dr. J. K. Basu, Additional Chief Engineer-in-charge, CPWD; Engineer-in-chief, Ministry of Defence; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CRRI (Members).

National Botanic Gardens, Lucknow—Chief Minister for Uttar Pradesh (Chairman); Dr. B. P. Pal; Inspector-General of Forests, Ministry of Food and Agriculture; Dr. J. C. Sen Gupta; Dr. K. A. Chowdhury; Shri M. B. Raizada; Shri M. S. Randhawa; Dr. S. B. Singh; Prof. P. Maheshwari; Dr. T. S. Sadasivan; Dr. K. C. Naik; Dr. K. Biswas; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, NBG (Members).

Central Electronics Engineering Research Institute, Pilani—Shri M. P. Birla (Chairman); Shri B. V. Baliga; Dr. D. S. Kothari; Dr. K. S. Krishnan; Dr. M. B. Sarwate; Technical Expert, Bharat Electronics (Private) Ltd.; Representative of the Department of Atomic Energy; Director (Research), Ministry of Defence; Prof. K. Sreenivasan; Dr. J. N. Bhar; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, CEERI (Members).

Regional Research Laboratory, Hyderabad—Chief Minister for Andhra Pradesh (Chairman); Prof. T. R. Seshadri; Dr. S. Bhagawan-tam; Shri Charat Ram, Representative of the Department of Atomic Energy; Dr. G. P. Kane; Representatives of the Andhra Pradesh Government to be nominated by the State; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, RRL (Members).

Indian Institute for Biochemistry & Experimental Medicine, Calcutta—Dr. B. C. Roy (Chairman); Dr. B. C. Guha; Dr. Amarnath Mukherji; Director, Haffkine Institute; Dr. C. G. Pandit; Dr. V. R. Khanolkar; Maj.-Gen. S. L. Bhatia; Dr. Subodh Mitra; Dr. R. M. Kasliwal; Dr. M. V. Govindaswami; Dr. Thirumalachar; Director, Indian School of Tropical Medicine; Director-General, Scientific & Industrial Research; Financial Adviser, CSIR; and Director, IIBEM (Members).

RESEARCH SCHEMES TERMINATED

THE FOLLOWING RESEARCH SCHEMES have been terminated with effect from Feb. 28, 1958:

1. *Investigations on veratrum alkaloids*—Dr. B. K. Bhattacharya, Jadavpur University, Calcutta.

2. *Dessication of carp seeds*—Shri A. K. Das, Animal Husbandry and Fisheries Department, Andhra Pradesh, Hyderabad.

3. *Design and construction of a transformer analogue computer*—Dr. P. Venkata Rao, Indian Institute of Science, Bangalore.

4. *Age determination of igneous and metamorphic rocks of the pre-cambrian era*—Dr. C. Mahadevan, Andhra University, Waltair.

5. *Pressure leaching of copper ores and reduction of the leach solution with a reducing gas to produce copper metal*—Dr. N. K. Bose, Jadavpur University, Calcutta.

6. *Polymerization of 3-carene from Indian turpentine oil, etc.*—Dr. L. M. Yeddanapalli, Loyola College, Madras.

7. *Studies on plasticity and its relation to other physical and chemical properties of Indian clays*—Dr. D. Lahiri, University College of Science & Technology, Calcutta.

8. *Palynology*—Dr. R. N. Lakhanpal, Birbal Sahni Institute of Palaeobotany, Lucknow.

9. *Survey of sub-soil brine resources; Utilization of Sambhar bitterns*—Shri P. N. Kathju, Officer-on-Special Duty, Jaipur.

10. *Drift card scheme for the study of ocean currents*—Dr. S. Jones, Central Marine Fisheries Research Station, Mandapam.

11. *Measurement of dielectric constant at microwave frequencies*—The Registrar, Roorkee University, Roorkee.

12. *Study of scattering of radio waves*—Dr. S. S. Banerjee, Banaras Hindu University, Banaras.

13, 14 & 15. *Development of new alloys; Gases in steel; and Studies on the corrosion of metals & alloys*—Dr. B. Chatterjee, Bengal Engineering College, Howrah.

16. *Three dimensional electrical analogy studies*—Shri S. Panchanathan, Executive Engineer, Soil

Mechanics & Research Station, Madras.

17. *The operation of ejectors with oscillating forcing flow (Hot air engines and their development)*—Shri K. Mahadevan, Indian Institute of Science, Bangalore.

18. *Possibilities of pearl essence production in India*—Dr. N. K. Panikkar, Fisheries Development Adviser, Ministry of Food & Agriculture, New Delhi.

THE RESEARCH SCHEME, *Anthraquinonoid and sulphurized vat dyes* has been transferred from the Department of Chemical Technology, Bombay University to the National Chemical Laboratory, Poona. The work under the scheme will now be carried out as a regular programme of the Laboratory.

I.G.Y. News Letter

The third (No. 3) in the series of 'I.G.Y. News Letter' (CSIR News, Vol. 8, No. 6, p. 2) issued by the Indian National Committee for the IGY on March 28, 1958 gives a preliminary report on the launching in the U.S.S.R. of the first and second artificial earth satellites.

Prof. K. Freudenberg

Prof. K. Freudenberg, Professor of Organic Chemistry and Director of Research Institute for Wood and Polysaccharides Chemistry, University of Heidelberg, Germany, visited the Regional Research Laboratory, Hyderabad on March 8-10, 1958 and the Central Drug Research Institute, Lucknow on March 22, 1958 where he delivered a lecture on "Contributions to the Chemistry of Lignin and Catechin".

Born on Jan. 20, 1886, Prof. Freudenberg got his Doctorate while working with Emil Fischer from the University of Berlin, in 1910. He was Professor of Chemistry and Director of the Chemical Institute of Technical University of Karlsruhe from 1922-26. In April 1926 he joined the University of Heidelberg.

Prof. Freudenberg has made numerous contributions in the field of organic chemistry specially on tannins and catechin, stereochemistry, carbohydrates, insulin and lignin and related substances.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory, Jamshedpur

Zircon Refractories—Zircon is available in large quantities as a bye-product during the processing of Travancore beach sands for monazite. Bricks prepared in the Laboratory utilizing zircon have shown good resistance to thermal shock and corrosion by molten metals and slags.

Zircon bricks are extensively used in melting aluminium, continuous casting of steel and glass tank furnaces — T. V. Prasad, M. C. Kundra & H. V. Bhaskar Rao.

Up-grading of Iron Ore—Iron ores containing about 65 per cent iron are required for export to Japan as per the new trade agreement between India and Japan. Hence the problem of beneficiation of iron ore from Bonai, Orissa (assaying Fe, 59.6; SiO₂, 2.23; and Al₂O₃, 4.45 per cent; ignition loss at 1000°C., 7.5 per cent) was taken at the instance of the Union Ministry of Steel, Mines and Fuel. Investigations have shown that calcining the ore at 500°C. and above eliminates most of the combined water and up-grades it to over 64 per cent iron. Heating the sample gradually to 650°C. and soaking at this temperature for half an hour yields a product assaying 64.1 per cent iron.

Central Fuel Research Institute, Jealgora

Nahorkatiya Crude Oil—Tests of samples of crude oil from Nahorkatiya (Assam) in respect of their physical properties (according to the I.P. standard methods) such as viscosity-gravity constant, correlation index and characterisation factor have shown that the crude oil contains hydrocarbons of mixed naphthenic and paraffinic base with naphthenic character predominating.

Central Glass & Ceramic Research Institute, Calcutta

Decolorisation of Glass—Glass can be decolorised so as to increase its transparency by using manganese alone or in admixture with cerium. This has been revealed as a result of investigation carried out

at the Institute for developing methods for the decolorisation of glass without the use of selenium.

The amount of manganese required for decolorisation when used alone is double that required when used along with cerium. Cerium containing glasses are brighter and more transparent than those containing manganese.

Central Drug Research Institute, Lucknow

Experimental Tuberculosis—Pharmacological studies in experimental tuberculosis of guinea pigs have been in progress (CSIR News, Vol. 7, No. 3, p. 3). Macroscopical and histopathological studies on the effect of administration in comparable dose of (6, 12, 18 and 24 mg./kg./day) isobutyl sulphone (S.N. 47) along with DHS (1.5 mg./kg./day) or INH (0.4 mg./kg./day) and S.N. 47 alone have been carried out. The combined effects of S.N. 47 with DHS and INH were additive and not synergistic.

Central Road Research Institute, New Delhi

Bullock Cart Traffic—The effect of bullock cart traffic on motor vehicle flow on 2-lane roads has been studied to ensure safety and efficiency. The study indicates that (i) on the rural 2-lane highways bullock carts (if more than four per hour travelling in either direction) should travel in caravans, preferably of six and (ii) in urban areas bullock carts should travel in singles.

Sponsored Research

Coumarin Compounds—Synthesis and testing of various coumarin derivatives is in progress with a view to determining the exact structural features necessary to obtain compounds having activity on the cardiovascular and respiratory systems.

Twenty-five coumarin compounds with different structural features were prepared and tested for their anti-veratrinic action on rabbits. In appropriate concentrations, most of these compounds not only abolished the veratrine response but also prevented it when the muscle

was treated with them. The relative values of various substituents in the basic coumarin skeleton with regard to their anti-veratrinic action have also been assessed. The alkyl group considerably reduced the activity whereas an aryl group increased it. A hydroxyl group at the 7-position was more favourable than at 3, 4, 6 or 8-positions.

The coronary dilator action of coumarin, 4-phenyl-6:7-dihydrocoumarin, 3-phenyl-4-methyl-7-hydroxy coumarin, 4-phenyl-7:8-dihydroxy coumarin and 3-bromo-4-hydroxy coumarin was studied by a modification of the Langedroff technique using isolated rabbit's heart. All the compounds increased the coronary flow (20-160 per cent), heart rate (12-40 per cent) and amplitude of contraction (20-100 per cent). 4-Phenyl-6:7-dihydroxy coumarin was the most promising in view of its low toxicity and pronounced coronary vasodilatory action.

Anti-arrhythmic action of coumarin, 3-phenyl-7-methoxy coumarin, 3-phenyl-4-methyl-7-hydroxy coumarin were tested, using dogs as experimental animals, adopting the following methods: (1) Acetylcholine-like induced auricular fibrillation method of Scherf and Chick; (2) electrically induced auricular flutter technique; (3) aconitine induced auricular fibrillation method of Scherf; and (4) petroleum ether-adrenaline induced ventricular arrhythmia technique. 3-Phenyl-4-methyl-7-hydroxy coumarin showed promising results in preliminary testing.

Broncho-dilator action of 3-phenyl-7-methoxy coumarin and 3-phenyl-4-methyl-7-hydroxy coumarin was studied by two methods. In the first, isolated tracheal chain preparation of dogs was used and the anti-acetylcholine activity of the compounds was tested. In the other method, morphine was first given to rabbits to induce respiratory depression, followed by administration of the compound under study and the effect on the respiration rate was observed. 3-Phenyl-7-methoxy coumarin exhibited broncho-dilator activity—T. R. Seshadri & N. R. Krishnaswamy, Delhi University, Delhi.

SURKHI AS POZZOLONA RESEARCH REPORT

In view of the great need for economising cement and many beneficial properties imparted by the addition of *surkhi* to cement concrete, investigations by N. R. Srinivasan have been in progress on *surkhi* as a pozzolona at the Central Road Research Institute, New Delhi. The results of the investigations have been brought out in the form of a report in the first number of *Road Research Papers*.

The 74-page publication presents (in two parts) useful information regarding the selection of soil, influence of mineral composition of clay and influence of degree of burning on the pozzolonic activity.

Part I of the Report deals with a detailed investigation of the mineralogical composition of clays and the pozzolonic activity of the *surkhis* prepared from them at different temperatures. A lime reactivity test to assess the pozzolonic activity of the *surkhi* is reported.

Results of investigations extended to soil samples, whose mineralogical composition was already known in a general way are presented in Part II of the Report. The lime reactivity of the *surkhi* prepared at different temperatures is reported. Suggestions regarding the type of soil to be chosen and the optimum temperature of burning for different types of clays have been given. The data obtained have been useful for drafting the tentative specifications for *surkhi* by the Indian Standards Institution.

Copies of the publication are available from the Director, Central Road Research Institute, New Delhi-20.

DIRECTORY OF INDIANS ABROAD

A special 'Indians Abroad' section has been recently opened under the National Register Unit of the CSIR for the collection and maintenance of information regarding technically qualified Indians working in foreign countries with a view to assessing their availability in the context of the requirements of India's development plans. The categories of personnel covered are: Scientists, Technologists,

Engineers, Medical Personnel, Business Administrators and Accountants. So far, over 950 names have been registered. Registration forms have been supplied to Indian Missions abroad for collecting the information.

The information (names and brief particulars of the Indians abroad including those who have either recently returned or likely to return in the near future) is to be published in the form of Directories for distribution to the employing agencies, both in the Government departments including Public Service Commissions, universities, research organizations, private industries, etc.

The first of the Directories comprising *Engineering Personnel* (classified list of Aeronautical, Agricultural, Civil, Communication, Engineers, etc.), has just been brought out. Copies of the publication are available on request from the National Register Unit, Council of Scientific & Industrial Research, Old Mill Road, New Delhi-2.

Research Papers

THE NATURE OF REACTIVE GROUPS IN ABNORMAL COALS — M. S. Iyengar & A. Lahiri, CFRI, Jealgora. *Fuel*, 37 (1958), 29 - 35.

SYSTEMATICS OF HIGH VOLATILE COALS — B. K. Mazumdar, CFRI, Jealgora. *Fuel*, 37 (1958), 119 - 23.

GRINDABILITY OF INDIAN COALS — A. Ghosal, L. C. Roy, R. N. Bose & A. Lahiri, CFRI, Jealgora. *J. Inst. Fuel*, 31 (1958), 50 - 51.

FUEL EFFICIENCY STUDIES IN A GLASS INDUSTRY — S. G. Rao, M. M. Sen, S. K. Das Gupta & A. Lahiri, CFRI, Jealgora. *Indian Ceram.*, 4 (1957), 13.

PERSONAL

(Contd. from p. 1, col. 3)

*DR. K. V. SRINATH has been appointed, on promotion, Senior Scientific Officer: Grade I, CFTRI, Mysore, with effect from Nov. 15, 1957.

*DR. C. R. KRISHNA MURTI has been appointed, on promotion Senior Scientific Officer: Grade I, CDRI, Lucknow, with effect from Nov. 15, 1957.

*DR. S. C. AGARWALA has been appointed, on promotion, Senior Scientific Officer: Grade I, CDRI, Lucknow, with effect from Nov. 15, 1957.

*DR. NITYA ANAND has been appointed, on promotion, Senior Scientific Officer: Grade I, CDRI, Lucknow, with effect from Nov. 15, 1957.

*DR. B. M. GUPTA has been appointed, on promotion, Senior Scientific Officer: Grade I, CDRI, Lucknow, with effect from Nov. 15, 1957.

*DR. A. B. KAR has been appointed, on promotion, Senior Scientific Officer: Grade I, CDRI, Lucknow, with effect from Nov. 15, 1957.

*SHRI A. GHOSAL has been appointed, on promotion, Statistical Officer, CFRI, Jealgora, with effect from Jan. 21, 1958.

*SHRI M. M. SINGH has been appointed, on promotion, Junior Scientific Officer (Stores & Purchase), CBRI, Roorkee.

CSIR PUBLICATIONS

The Vice-President, Council of Scientific & Industrial Research has been pleased to sanction the grant of 25 per cent concession on the sale price of CSIR publications to technical staff of the Council.

Council of Scientific & Industrial Research New Delhi

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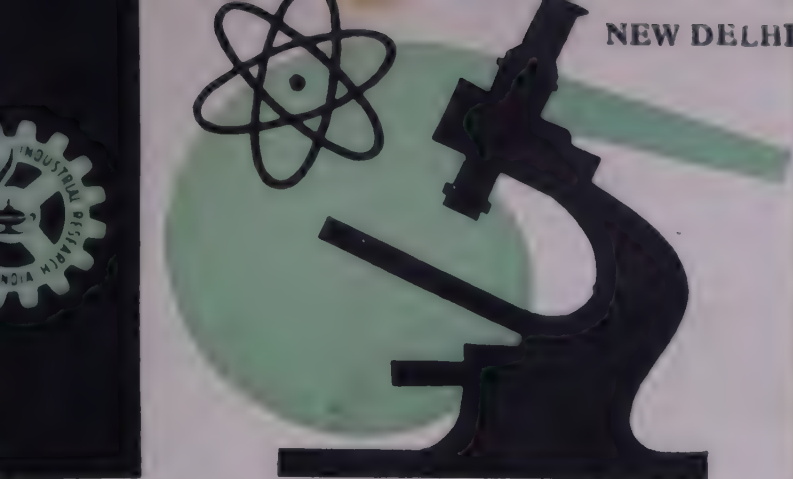
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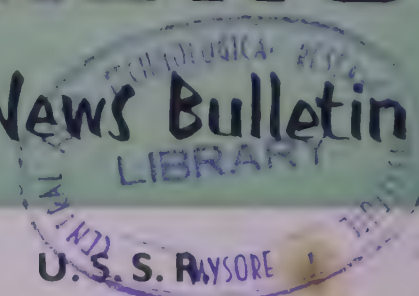
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CSIR NEWS

A Fortnightly News Bulletin



SCIENTISTS' DELEGATION T

U.S.S.R. Mysore

At the invitation of the U.S.S.R. Academy of Sciences, a delegation of Indian scientists, headed by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, will leave Delhi on April 30, on a three weeks' tour of the U.S.S.R. The members of the delegation, which includes scientists in all branches of science & technology, will visit institutions and industries in the U.S.S.R. with a view to study Soviet techniques and methodology in the field of industrial sciences.

The 15-member delegation includes the following Directors of national laboratories: Dr. A. Lahiri (CFRI, Jealgora), Dr. Atma Ram (CGCRI, Calcutta), Dr. B. R. Nijhawan (NML, Jamshedpur), Dr. B. Mukerji (CDRI, Lucknow) and Prof. S. R. Mehra (CRRI, New Delhi) and Dr. T. R. Seshadri (Delhi University, Delhi), Dr. P. Maheshwari (Delhi University, Delhi), Prof. C. Mahadevan (Andhra University, Waltair), Dr. S. R. Palit (Indian Association for the Cultivation of Science, Calcutta), Dr. R. S. Vasudeva (I.A.R.I., New Delhi), Dr. S. Bhagavantam (Indian Institute of Science, Bangalore), Dr. Ajit Saha (Calcutta University, Calcutta), Dr. K. Chandrasekharan (Tata Institute of Fundamental Research, Bombay) and Shri J. J. Ghandy (Tata Iron & Steel Co. Ltd., Jamshedpur).



First row (from left to right)—Prof. M. S. Thacker (leader of the delegation), Prof. S. R. Mehra and Dr. B. R. Nijhawan.
Second row—Dr. B. Mukerji, Dr. A. Lahiri and Dr. Atma Ram

New Members of G.B. & BSIR

The President of India has been pleased to appoint the following as members of the Governing Body of the Council and the Board of Scientific & Industrial Research.

Governing Body:

PROF. HUMAYUN KABIR; SHRI MORARJI R. DESAI; SHRI LAL BAHADUR SHASTRI; and SHRI MANUBHAI SHAH.

Board of Scientific & Industrial Research:

PROF. HUMAYUN KABIR; SHRI MANUBHAI SHAH; SHRI P. C. MUKERJEE; and DR. A. NAGARAJA RAO.

I.G.Y. National Committee

The following communication has been received for announcement:
Ten out of the eighteen months of the International Geophysical

Year are over and many interesting phenomena have been recorded and reported. But so far, no reports of visual observations of aurorae from any part of India have been forthcoming. Professional and amateur observers are reminded of the value of auroral observations from low latitude; and are requested to continue their watchfulness throughout the International Geophysical Year. The rarity of the occurrence would enhance the value of the observations.

Personal

*DR. S. A. SALETORÉ has been appointed, on promotion, Deputy Director, RRL, Hyderabad, with effect from March 10, 1958.

*DR. J. S. AGGARWAL, Senior Scientific Officer, NCL, Poona, has been appointed Assistant Director,

RRL, Hyderabad, with effect from April 7, 1958.

*DR. I. K. KACKER has been appointed, on promotion, Senior Scientific Officer: Grade I, RRL, Hyderabad, with effect from Nov. 15, 1957.

*DR. K. T. ACHAYA has been appointed, on promotion, Senior Scientific Officer: Grade I, RRL, Hyderabad, with effect from Nov. 15, 1957.

*SHRI M. H. PANDYA has been appointed Senior Scientific Officer: Grade I (Architect), CBRI, Roorkee, with effect from March 24, 1958.

*DR. (KUMARI) SARDAR MAHBOOB has been appointed, on promotion, Senior Scientific Officer: Grade II, RRL, Hyderabad, with effect from March 10, 1958.

(Contd. on p. 6, col. 2)

Fellowship of the Royal Society

Two distinguished Indian scientists, Prof. S. N. Bose and Prof. S. K. Mitra have been elected Fellows of the Royal Society, London for their distinguished contributions to science.

PROF. S. N. BOSE, F.R.S.

Prof. Satyendra Nath Bose (b. 1894) graduated from the Calcutta



Prof. S.N. Bose

University and took his M.Sc. degree in 1915, standing first in the examination. In 1927, he moved to Dacca and during nearly two decades of his association with the Dacca University, first as Reader in Physics and later, as Professor and Head of the Department, he devoted himself to studies in theoretical physics. In 1924, he visited Europe and had fruitful collaboration with Prof. Einstein. Prof. Bose was Khaira Professor of Physics, Calcutta University (1946-56); he is now Vice-Chancellor of the Visvabharati University.

Prof. Bose is a front rank theoretical physicist, who has contributed conspicuously to the development of quantum mechanics. He was the originator of a new branch of statistics, known as Bose-Einstein statistics, which won the appreciative recognition of Prof. Einstein and which was later extended by him. Nuclear particles following this type of statistics are named "Bosons". Prof. Bose has made significant contributions to Einstein's general theory of relativity and, more recently, to the unified field theory.

Prof. Bose was General President, Indian Science Congress, 1944; and Chairman, National Institute of Sciences, 1948 - 50.

Prof. Bose has been connected with the CSIR as a member of the Governing Body since 1948. He was a member of the Second Quinquennial Reviewing Committee of CSIR (1954).

PROF. S. K. MITRA, F.R.S.

Prof. Sisir Kumar Mitra (b. Calcutta, 1890) had his collegiate education in the Presidency College, Calcutta. He took his Doctorate degree in 1919 from the Calcutta

University and proceeded to Paris for further studies at Sorbonne University. On his return to India in 1923, Prof. Mitra was appointed Khaira Professor

of Physics and later (1935) Sir Rashbehari Ghose Professor of Physics, Calcutta University. Prof. Mitra retired from the latter chair in 1955 and



is at present the Prof. S.K. Mitra Director of the Institute of Radio Physics & Electronics, Calcutta.

Prof. Mitra is a pioneer in the field of radio research in India and was the first to organise post-graduate teaching and research in wireless communication. He has contributed substantially to our understanding of ionospheric stratification, night sky spectrum and nature of active nitrogen. He is the author of *Upper Atmosphere*—a book which has received worldwide recognition.

Prof. Mitra was the General President of the Indian Science Congress in 1955. He was also the President of the Indian Science News Association and a member of the Indian National Committee of the International Geophysical year.

Prof. Mitra has been closely associated with the CSIR Radio Research Committee since its establishment in 1943. The Ionospheric Field Station at Haringhatta, the first of its kind in India, has been established largely through his efforts with financial help from the CSIR.

B R I E F S

Wealth of India— Industrial Products: Part IV

The latest addition to the series of volumes of the *Dictionary of Indian Raw Materials & Industrial Products* published by the CSIR under the general title "Wealth of India", is Industrial Products, Part IV (F-H). This part contains 31 major articles, among them, Ferroalloys, Fertilizers, Filigree, Film Industry, Fire Extinguishers, Fish Oils, Flax Manufactures, Flour-Milling, Formaldehyde, Furfural,

Fusel Oil; Galvanizing, Gas Mantles, Glandular Products, Glass, Glucose, Gold & Silver Thread, Gubha Industry, Gur, Guts; Handloom Industry, Hides & Skins, Honey, Horn, Hosiery, Hydrogen, Hydrogen Peroxide and Hydroquinone.

As in the previous parts, each article provides comprehensive information on the development of the industry and its present position; principal raw materials—their sources and availability; manufacturing processes; and available statistical data on production and trade. The more important processes followed in other countries are indicated with references to literature. The articles are based on a critical evaluation of published information on each industry collected and collated from books, periodicals, reports and other publications. Brevity and conciseness have been kept foremost in view, and in order to facilitate those interested in further information, copious references are given to original literature. Coloured plates, text figures and tables have been included at suitable places to supplement description.

The 304-page publication printed on art paper (demy 4to) includes 19 plates and 133 text-figures. Copies (Price, Rs. 25 per copy) are available from the Publications Directorate, CSIR, Old Mill Road, New Delhi-2.

Scientists and Technologists— Indians Abroad

The second in the series of Directories (CSIR News, Vol. 8, No. 7, p. 6) comprising *Scientists & Technologists* has been published. Copies of the publication are supplied to Government Departments, research organisations, universities and private industries who are likely to utilise the information.

Fruit Technology Diploma Recognised

The Associateship awarded by the Central Food Technological Research Institute, Mysore, to students who successfully complete the course in *Fruit and Vegetable Technology* has been recognised as equivalent to M.Sc. Degree by the Maharaja Sayajirao University of Baroda for purposes of registration for the Ph.D. Degree.

RESEARCH IN PROGRESS

National Laboratories

*National Metallurgical Laboratory,
Jamshedpur*

Aluminium Cladding of Steel—

A process for cladding mild steel with aluminium has been developed. It consists in preparing a block of mild steel plate and sandwiching it between two aluminium sheets. The block is cold-rolled and subsequently hot-rolled at 550°C. The composite sheet is annealed at 600°C.

Clad sheets possess satisfactory ductility. No sign of separation of aluminium sheets from mild steel plate was visible after fracture during cupping tests. Metallographic examination of the bond-zone indicates recrystallised grains across the zone.—R. CHOUBEY & S. K. BANERJEE.

*Central Fuel Research Institute,
Jealgora*

Washing of Coals—Washability characteristics of Bokaro and Kargali steam coals [received from *Hindusthan Steel (P) Ltd.*] have been studied in a heavy-medium drum pilot washer (capacity, 1.5 ton/hr.) at sp. gr., 1.52, using barytes as the medium. The yield of cleans from Bokaro coal is 68.83 per cent (ash, 16.8 per cent) and

that from Kargali coal is 52.47 per cent (ash, 19.4 per cent). Cleaned Bokaro-Kargali slack (crushed to $\frac{1}{2}$ in. and washed in the feldspar jig washer at Londa) contains 13.4 per cent ash.

A blend of cleaned Bokaro-Kargali coals (steam coal, 44 per cent; slack, 56 per cent), containing 15 per cent ash, is suitable for metallurgical use.

Phenol from Benzene—The preparation of phenol through cumene, using benzene as starting material, is under investigation. Cumene is obtained in 75–85 per cent yield by isopropylation of benzene, using sulphuric acid (sp. gr., 1.76) as catalyst; cumyl hydroperoxide is obtained from cumene by mild catalytic oxidation and phenol is formed by molecular rearrangement of cumyl hydroperoxide.

*Central Glass & Ceramic Research
Institute, Calcutta*

Pink Ceramic Pigment—Chrome Tin Pink is the pigment usually employed in underglaze and overglaze decoration of pottery and chinaware. Investigations in progress at the Institute have established that dark rose pink and brick red colours can be produced from compositions based on potassium dichromate and alumina at the

sintering temperature of 1300°C. The use of tin oxide, which is an imported material, has been eliminated.

*Central Leather Research Institute,
Madras*

Syntans—Exchange type syntans, prepared in the Institute from cresol-phenol blends, have proved to be satisfactory substitutes for 'Tannigan Extra A', imported from Germany. The process consists of: sulphonation of cresol-phenol blends, condensation with formaldehyde, and acetylation; sulphonation and condensation are repeated to secure high yields. Leathers retanned with the new materials, possess good lustre and smooth grain.

Sponsored Research

Leather and Photographic Emulsions—The blackening observed when photographic emulsions are brought into contact with leather has been quantitatively measured with the help of a photoelectric densitometer. The leather strip is placed on the sensitised surface of a photographic plate in total darkness for 24 hr.; the plate is developed in the usual way and the degree of blackening measured.

Some of the fast-speed plates are not sensitive to leather. Prior exposure of leather to sunlight increases the blackening effect.

Leather strips were exposed to sunlight filtered through red, green and blue filters, and their activity on photographic emulsions was studied. It was found that blackening was most pronounced in the case of leather exposed to blue radiation; it was least with leather exposed to red radiation. Blackening diminishes with increase in wave length of the exciting radiation.

The cause of blackening has been traced partly to the presence of photographically active tanning agents. The composition of a few commercial tanning agents has been studied by the chromatographic technique and the active components have been identified.—V. P. NARAYANAN NAMBIYAR, Pachaiyappa's College, Madras.



CFRI, JEALGORA—Heavy medium drum pilot washer for coals

The appointment of Dr. Y. Nayudamma as Director, Central Leather Research Institute, Madras has been announced (CSIR News, Vol. 8, No. 4, p. 2).

Born on Sept. 10, 1922 in Andhra State, Dr. Yelavarthy Nayudamma graduated in Industrial Chemistry from the Banaras Hindu University.

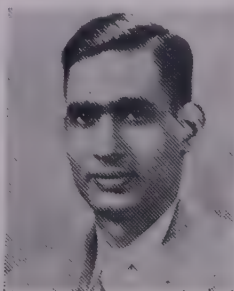
He was deputed by the Government of Madras for advanced training in Leather Technology in U.K. (1946-47) and U.S.A. (1947-51),

and he took his Dr. Y. Nayudamma M.S. and Ph.D. Degrees in Leather Chemistry from Lehigh University under the guidance of the late Dr. Edwin R. Theis.

After his return to India, he joined CLRI, Madras as Senior Scientific Officer in Dec. 1951 and was appointed Assistant Director and Assistant Director-in-charge in May 1953 and Sept. 1956 respectively.

Dr. Nayudamma is the author of over 100 research papers bearing on the chemistry and technology of leather and has taken a number of patents. He attended the International Conference of Leather Trades' Chemists, held in Rome in Sept. 1957, as representative of the Government of India.

Dr. Nayudamma is a member of the Institution of Chemists, India; Sigma XI Society, America; Royal Institute of Chemistry, U.K.; Society of Leather Trades' Chemists, U.K.; American Leather Chemists' Association; American Chemical Society; and Association of the Principals of Technical Institutions (India). He is Chairman, Leather Sectional Committee of the Indian Standards Institution and a member of the Export Promotion Committee of the Leather Export Promotion Council; Forest Utilisation Board, Madras; Planning and Action Research Committee, Lucknow. He is Honorary Special Officer, Indian Central Arecanut Committee and also an Honorary Professor of Leather Technology, University of Madras.



(Contd. from p. 1, col. 3)

*SHRI Y. N. TREHAN has been appointed Junior Scientific Officer, NML, Jamshedpur, with effect from Dec. 31, 1957.

*DR. H. L. BHATNAGAR has been appointed Junior Scientific Officer, NCL, Poona, with effect from March 31, 1958.

*SHRI S. K. CHOPRA, Senior Scientific Officer, CBRI, Roorkee, who returned from U.K. after completion of training at the Building Research Station, U.K. (under the Colombo Plan) resumed duty from Jan. 26, 1958. His work was devoted to the Chemistry of Silicates.

*SHRI B. C. RAYCHOUDHURI, Junior Scientific Officer, CBRI, Roorkee resumed duty on Feb. 13, 1958 after completion of his training (under TCM Programme) in Heat flow through composite structures using electrical analogy method at the National Bureau of Standards, Washington.

*PROF. S. R. MEHRA, Director, CRRI, New Delhi, has been elected Fellow of the National Institute of Sciences of India.

*DR. B. MUKERJI, Director, CDRI, Lucknow, has been admitted as a member of the International Society for Research on Coagulation of Blood, Capillary Function and Practical Mycology, Great Britain.

*DR. K. S. G. DOSS, Director, CECRI, Karaikudi, has been nominated National Secretary of the Comité International De Thermodynamique Et De Cinétique Electrochimiques in India.

Process Ready for Exploitation

A process for producing carbon-bonded graphite crucibles for use in non-ferrous and ferrous foundries and for highly corrosive melts has been worked out by the National Metallurgical Laboratory. Crucibles (capacity, 20-25 lb. of metal) have been prepared and tested by industry.

The process consists in mixing the body ingredients while hot, pressing in hydraulic or toggle presses into crucibles, ageing, baking in a reducing atmosphere, and flashing the crucibles, before storage, at high temperature. The equipment required includes: Size reduction unit, mixers, crucible press, baking kilns and flashing furnaces. The process is covered by Indian Patent No. 58869.

Parties interested in undertaking the development of the process may write to the Secretary, National Research Development Corporation of India, Mandi House, New Delhi-1.

*SHRI P. C. BANERJEE, Research Assistant, CSIR Scheme, Scattering of radio waves, has been awarded the Ph.D. degree by the Banaras Hindu University for his thesis entitled: Study of the Propagation Characteristics of Ultra Short Radio Waves.

*SHRI T. R. RAJAGOPALAN, Junior Research Assistant, CSIR Scheme, Chemical investigation of Indian lichens and antibiotics from heartwoods, has been awarded the Ph.D. degree by the Delhi University for his thesis: A study of Fungal & Lichen Anthraquinones.

Council of Scientific & Industrial Research

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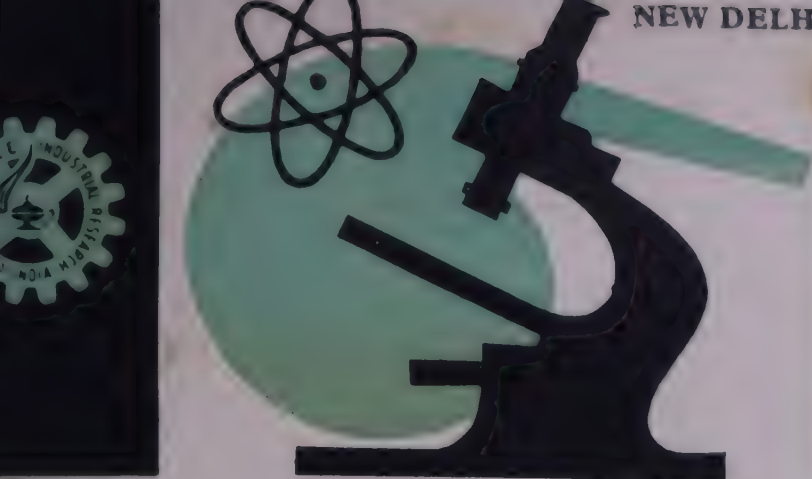
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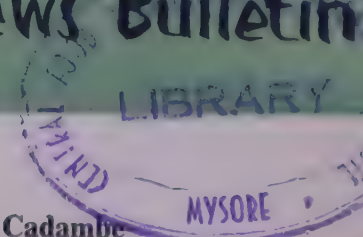
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CSIR NEWS

A Fortnightly News Bulletin



Meetings

A meeting of the *Public Health Engineering Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi on May 27, 1958 at 3.00 p.m. Shri N. V. Modak will preside.

CLRI Practical Demonstration UPHOLSTERY LEATHERS

The manufacture of upholstery leathers will be demonstrated to representatives of the tanning industry at the Central Leather Research Institute, Madras, from May 13 to 22, 1958.

Personal

* The President, CSIR, has been pleased to order that during the deputation of Prof. M. S. Thacker to the U.S.S.R. from April 30 to May 22, 1958, Dr. K. S. Krishnan, Director, NPL, New Delhi, will look after the duties of the Director-General, Scientific & Industrial Research.

*SHRI N. V. MODAK, Special Engineer, Bombay Municipal Corporation, has been appointed Director, Central Public Health Engineering Research Institute with effect from April 8, 1958.

*DR. V. N. SHARMA has been appointed, on promotion, Senior Scientific Officer: Grade I, NBG, Lucknow, with effect from Nov. 15, 1957.

*SHRI VED PRAKASH has been appointed, on promotion, Senior Scientific Officer: Grade II, NML, Jamshedpur, with effect from April 1, 1958.

*SHRI D. S. TANDON has been appointed, on promotion, Senior Scientific Officer: Grade II, NML, Jamshedpur, with effect from April 1, 1958.

*DR. H. P. BHATTACHARYYA has been appointed, on promotion, Senior Scientific Officer: Grade II, NML, Jamshedpur, with effect from April 1, 1958.

*SHRI JATINDER MOHAN has been appointed, on promotion, Senior Scientific Officer: Grade II, NML, Jamshedpur, with effect from April 1, 1958.

*SHRI P. C. SEN has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from April 1, 1958.

*SHRI S. K. BANERJEE has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from April 1, 1958.

*SHRI J. E. MANNAR has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from April 1, 1958.

*SHRI BALWANT SINGH has been appointed, on promotion, Junior Scientific Officer, NML, Jamshedpur, with effect from April 1, 1958.

*SHRI G. R. CHAUDHRY has been appointed Junior Scientific Officer, NBG, Lucknow, with effect from April 2, 1958.

*SHRI S. K. BOSE, Junior Scientific Officer, CFRI, Jealgora, resumed duty in February 1958 after completion of one-year practical training (under Point Four Programme) in the design and operation of coal tar hydrogenation plant. During his training period Shri Bose worked in the U.S. Bureau of Mines, Coal and Oil Division at Bruceton, Pennsylvania and later in W. Germany in *Scholven Chemie A. G.* at Gelsenkirchen-Buer, *B-V Aral-Bochum* and the pilot plants of the mineral oil division of *Lurgi Gesellschaft fur Warme technik* at Frankfurt.

Shri V. Cadambe

The appointment of Shri V. Cadambe as Director (Planning), Central Mechanical Engineering Research Institute, has been announced (*CSIR News*, Vol. 8, No. 3, p. 1).

Born on Dec. 10, 1910 in Bangalore, Shri V. Cadambe passed his M.Sc. (Hons.) in Mathematics in first division from the Mysore University (1933) and started his career as lecturer in Bombay Colleges (1933 - 37). He was appointed



Chief Instructor and Secretary, *Shri V. Cadambe Air Services of India Technical Training Centre*, at Jamnagar, in 1937; after 3 years he proceeded to U.S.A. for further studies. He took his M.S. from the California Institute of Technology and was appointed Structural and Aerodynamic Engineer, *Hughes Aircraft Factory*, Los Angeles (1942 - 44) and Senior Structural Engineer, *Douglas Aircraft Factory*, U.S.A. (1944 - 46).

On his return to India in 1946, Shri Cadambe joined *Tata Aircraft Ltd.*, Titaghur. In May 1948, he was appointed Assistant Director (Applied Mechanics Division) National Physical Laboratory, New Delhi and during 8 years of his association with the Laboratory, he took keen interest in its development. In April 1956, Shri Cadambe's services were requisitioned by the Ministry of Defence as Director of Research & Development.

Shri Cadambe has published about 100 scientific and technical papers on varied subjects, such as

BRIEFS

Training Course in Electroplating

A three-month course of technical training in *Electroplating* has been organised by the Central Electrochemical Research Institute, Karaikudi. The course was inaugurated by Dr. K. S. Krishnan, Director, NPL, New Delhi on April 18, 1958.

The object of the course is to provide training in modern developments in theory and practice of electroplating to technical personnel engaged in different industries concerned with electroplating.

Dr. Krishnan while inaugurating the course, welcomed it as a step in the right direction as it would serve to bring the technical persons

elasticity, photoelasticity, vibration engineering, structural engineering, industrial testing and technical education and has taken out 8 patents. He is the author of the book *Engineering Research in India*. He attended the International Congress on *Theoretical and Applied Mechanics*, held at Istanbul in 1952. While on deputation with the Ministry of Defence, he led an *Electronics Delegation* to U.K., France, Germany, Switzerland, Holland and other continental countries for the selection of wireless, signal and radar equipment.

Shri Cadambe is an Associate Fellow of the Royal Aeronautical Society, London and Institute of Aeronautical Sciences Inc., U.S.A., and a Fellow of the Institution of Metallurgists, London and National Institute of Sciences of India. He is a member of the Institution of Structural Engineers, London; Institution of Mechanical Engineers, London; Institution of Engineers, (India); Indian Institute of Metals; Indian Mathematical Society; Applied Mechanics Society of India; Indian Association for the Cultivation of Science; Association of the Principals of Technical Institutions, and a Founder Member of the Aeronautical Society of India. He is a member of the CSIR Aeronautical and Electrical & Mechanical Engineering Research Committees; several Committees and panels of the Indian Standards Institution; and research committees of Railway Board and Ministry of Irrigation and Power. He is also associated with the Technical Education Board of Rajasthan and the Delhi University.

working in the industry closer to the research worker for their mutual benefit. He hoped that the trainees will go back to their work and bring to bear a scientific approach in tackling the problems facing the industry.

I.G.Y. National Committee

NEWS-LETTERS — I.G.Y. News-letters No. 4 - 6 have been issued. Letter No. 4 (April 9, 1958) records observations on solar activity, cosmic noise absorption and geomagnetic disturbances reported by I.G.Y. Stations and the *Comite Special Annee Geophysique Internationale* (CSAGI). Letter No. 5 (April 11, 1958) provides information on the launching of the first U.S. earth satellite and data on solar X-ray emission during flares obtained by the *U.S. Rocket Flare Patrol*. Letter No. 6 (April 12, 1958) gives a brief report of the U.S.S.R. Antarctic Expedition (Oct. 1957).

* * *

DR. F. E. ROACH of the Boulder Laboratories of U. S. National Bureau of Standards will be visiting India during the second week of May 1958. Dr. Roach will collaborate with the workers of the Physical Research Laboratory, Ahmedabad in conducting Air Glow measurements at Mt. Abu.

Alloy & Special Steels

The proceedings of the symposium on *Productions, Properties and Application of Alloy & Special Steels*, held at the National Metallurgical Laboratory, Jamshedpur, in 1956 have been published.

The 488-page publication includes the inaugural address by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research and forty-two technical papers presented at the symposium, with discussions. The papers included are: Alloy Steels—Technical and Economic Background (E. H. BUCKNALL); An Exposition of Alloy Steels for the Engineer (J. S. VATCHAGANDHY); Tailor-made Alloy Constructional Steels (B. R. NIJHAWAN); Recent Developments in Alloy and Special Steels in Great Britain (TOM BISHOP); Low-alloy High Strength Steels (V. G. PARANJPE & S. VISVANATHAN); Alloy and Tool Steel Industry in India (K. N. P. RAO); Alloy Steel Industry in India—Historical (B. R. NIJHAWAN & E. H. BUCKNALL);

Indian Alloy Steels for Engineering Industries (B. R. NIJHAWAN); The Mysore Iron & Steel Works as a Major Producer of Stainless Steel in India (J. R. MILLER); Manufacture in India of Ferro-alloys Used in Alloy Steel Industry (B. R. NIJHAWAN & P. K. GUPTA); An Investigation into the Development of Prospective Indian Austenitic Stainless Steels (P.K. GUPTA & B.R. NIJHAWAN); Practical Problems in the Manufacture of Alloy Steel (S. C. BISWAS); Deoxidation and Inclusion Control for Alloy Steel (WALTER CRAFTS & D. C. HILTY); Substitution of Alloying Elements by Grain Size Control of Alloy Steels (B. R. NIJHAWAN & A. B. CHATTERJEE); Progress of Special Steel-making Process in Japan (YOSHIO ISHIHARA); Temper-brittleness—Unalloyed Steel (B. R. NIJHAWAN); Temper-brittleness—Alloy Steels (B. R. NIJHAWAN & A. B. CHATERJEA); Influence of Nitrogen on the Low-temperature Brittleness of Steel (YUNOSHIN IMAI & TETSURO ISHIZANI); Segregation and Internal Weakness in Forging Ingots (N. H. BACON); The Effects of Hydrogen on Alloy Steel Production (K. C. BARRACLOUGH); Hydrogen in Steel (A. G. QUARRELL); Oxygen in Foundry Steel-making (A. K. GUPTA); Furnaces and Equipment Used in the Manufacture and Heat Treatment of Alloy Steel (R.A.P. MISRA); The Effect of Variation of Ruling Section on the Mechanical Properties of Carburizing Steels (J. E. RUSSELL & B. LUDGATE); The Molybdenum-boron Structural Steel (J. F. SEWELL & W. E. BARDGETT); Micro-metallurgy of Alloy Steels (B. R. NIJHAWAN); Boron Steels (THOMAS G. DIGGES); The Properties of High-speed Steel Derived from Magnetic Iron Sand (ENG. SADA O KOSHIBA); The Cast Structure of High-speed Steel (E. INESON & G. HOYLE); Sintered Materials on the Base of Iron with Special Regard to Alloyed Sintered Steels (RICHARD KIEFFER & FRIEDRICH BENESOVSKY); Studies on the Kinetics of Very Rapid Cooling in Different Quenching Liquids—Application to Some Alloys of Iron, Nickel and Carbon (R. FAIVRE & R. BIGOT); Some Recent Advances in the Study of Transformations in Alloy Steels (G. MAYER); Development of Creep-resistant Alloy Steels (G. P. CHATTERJEE); The Welding of Special and Alloy Steels (J. HINDE); The Stress-

(Contd. on p. 4, col. 1)

RESEARCH IN PROGRESS

National Laboratories

National Physical Laboratory,
New Delhi

Automatic Traffic Control Device

—An electronically operated automatic traffic control device has been developed at the Laboratory. The device which has been put to satisfactory experimental operation at Connaught Circus and Parliament Street Crossing, New Delhi has the following salient features: (1) The time interval (20-70 sec.) for 'open-traffic' for each of the cross-roads is variable, independently of the other. Amber (warning) light time interval is 3-7 sec. The ranges for these time intervals can be increased, if necessary; (2) the 'open and closed' traffic conditions can be controlled manually, but the amber light operation is automatic. The manual control has been incorporated to enable the handling of irregularities in traffic in emergencies; and (3) sense of change of traffic from closed to open or vice-versa can be indicated by keeping amber with red light and amber with green light respectively.

Central Fuel Research Institute,
Jalgaon

Survey of Assam Coalfields—A systematic physical and chemical survey of the coalfields of Assam has been initiated by the Coal Survey Station, Jorhat. Coal samples from Baragolai, Makum coalfield have been studied for screen analysis, bulk density, partial sub-sampling and proximate analysis including sulphur content and gray-king (l.t.c.) assay. Test results show that the coals contain: ash, 3.5-9.0; sulphur, 3.71-9.0 and phosphorus, 0.0013-0.0018 per cent. The calorific value is of the order 14,200 b.t.u./lb. The proportion of slack in the run-of-mine coal is 56-60 per cent.

Central Road Research Institute,
New Delhi

Laterites in Road Construction—Laterite, available in many parts of the country, has not, so far, been used in road construction.

A large scale sample survey of laterites has been carried out at the Institute. Many of the samples



NPL, NEW DELHI—Automatic traffic control device developed at the Laboratory

of laterite possess sufficient mechanical strength and resistance to warrant their use in sub-base and base course construction.

Sponsored Research

Trypsin Inhibitors in Foodstuffs

—Systematic work on the identification and isolation of trypsin inhibitors present in Indian vegetables and pulses, has been carried out at the Institute of Science, Bombay.

Sixty-five vegetables and twenty-six pulses have been tested. Inhibitors are present in almost all leguminous vegetables; four out of sixteen root vegetables and one out of five stem vegetables; flower and fruit vegetables are generally devoid of trypsin inhibitors. Almost all pulses contain trypsin inhibitors.

Trypsin inhibitors are proteinous in character and show no specific group peculiarities. They are stable at low temperatures. Their sensitivity to heat, however, varies. The preparation from double bean is extremely stable; that from field bean is moderately stable; while the inhibitor prepared from potato tubers is destroyed by heat treatment.

Growth studies with rice moth larvae (*Corcyra cephalonica* Stn.) fed on diets containing varying concentrations of trypsin inhibitors showed that growth is retarded by trypsin inhibitors; the higher the concentration of the inhibitor,

the greater is the retardation in growth.

Electrochemical Etching of Metal and Alloy Crystals

—Growth features of etched metal and alloy surfaces and deposits have been studied by electrochemical etching. Experiments with silver electrodes and silver nitrate as electrolyte carried out at room temperature conditions show that better results for surface structures are obtained in weaker solutions; the rate of growth can be conveniently controlled by varying the potential gradient across the electrodes.

The dendritic deposits examined under high resolution microscopy are found to reveal interesting structural features. The structure is remarkable for the clarity of triangular and rectangular crystals and other growth features, which are characteristic of f.c.c. lattice of silver; generally the depositions follow the growth pattern of ionic crystals. Thin layers of silver ions spread out from certain nuclei present on crystal faces; the layers retain their charge while spreading, reversing the current instantaneously reverses their direction of approach. The thickness of layers estimated with the help of multiple beam interferometry is found to be of the order of several hundred angstroms.

Large number of screw dislocations have been detected on crystal faces as they give rise to spiral layer growth. The spirals are

found to be too small having only two or three loops at a time. Attempts are being made to grow bigger spirals with larger number of loops so that precise measurements can be made regarding Burger's vector for these dislocations—P. G. DEO & B. D. SHARMA, Lucknow University, Lucknow.

Research Papers

SETTLEMENT IN BUILDING FOUNDATIONS—Dinesh Mohan, CBRI, Roorkee. *J. Instn Engrs (India)*, 38 (1957), 307-20.

PILE LOADING AND PULL OUT TESTS ON BLACK COTTON SOIL—Dinesh Mohan & G. S. Jain, CBRI, Roorkee. *J. Instn Engrs (India)*, 38 (1958), 409-21.

SYMPOSIUM PROCEEDINGS

(Contd. from p. 2, col. 3)

corrosion Cracking of Austenitic Stainless Steels in Aqueous Chloride Solution (T. P. HOAR & J. G. HINES); Effect of Low-alloy Additions on Corrosion of Steel in Different Atmospheres (K. P. MUKHERJEE, A. K. LAHIRI & T. BANERJEE); The Application of Alloy and Special Steels in Railway work (HUGH O'NEILL); Silicon Steel Sheets—An Outline of Properties, Applications and Recent Developments (J. MCFARLANE); Application of Alloy Steels to Aircraft Industry (V. CADAMBE); Application of Stainless Steels in Nuclear Technology (N. B. PRASAD & G. S. TENDOLKAR); Heat and Corrosion-resistant Alloy Castings of the United States of America (C. R. SUTTON & G. F. GEIGER); and Fabrication and Inspection of Alloy Steel Piping (WALTER W. OFFNER).

Rockets & Satellites

INTERNATIONAL SYMPOSIUM

A symposium on *Rockets & Satellites* will be held under the auspices of the *Comite Special Annee Geophysique Internationale* (CSAGI) at Moscow from July 30 to Aug. 9, 1958. Indian scientists, desirous of contributing papers to the symposium may forward their contributions through the Indian National Committee for I.G.Y., National Physical Laboratory, Hillside Road, New Delhi-12.

PATENTS & PROCESSES

Applications Filed

63289: *Improvements in or relating to vats for making hand-made paper*—G. S. Chowdhury, N. K. Chary, S. A. Saletore & S. H. Zaheer, RRL, Hyderabad.

63353: *A process for the preparation of 2-substituted amino-5-methyl - 2 - thiazolines*—K. S. Narang, Panjab University College, Hoshiarpur.

63719: *A process for the production of alkyl eugenols*—S. Mahboob, C. C. Reddy & S. H. Zaheer, RRL, Hyderabad.

Application Filed in U.K.

6911/58: *Improvements in or relating to the preparation of costus root oil and the products thereof*—G. R. Kelkar & S. C. Bhattacharyya, NCL, Poona.

Applications Accepted

58870: *A process for the isolation of the cardioactive glycoside of digitalis*—M. M. Dhar, N. M. Khanna & M. L. Dhar, CDRI, Lucknow.

59265: *An improved method for the isolation of psoralen-isopsoralen from dried fruits of Psoralea corylifolia (Babchi)*—S. Bhattacharji & M. L. Dhar, CDRI, Lucknow.

59456: *Improvements in or relating to the manufacture of hot face insulating bricks and blocks*—Atma Ram, J. C. Banerjee & P. K. Roy, CGCRI, Calcutta.

Applications Sealed

56391: *A process for the preparation of civetone dicarboxylic acid*—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

56726: *Preparation of water dispersible DDT as an oil bound paste*—(Miss) S. B. Kulkarni, A. B. Biswas, K. V. N. Rao & S. P. Bhide, NCL, Poona.

56817: *Improvements in or relating to compensators for transformers*—P. V. Rao, Indian Institute of Science, Bangalore.

57541: *A process for the preparation of dihydrojasnone*—R. K. Razdan & S. C. Bhattacharyya, NCL, Poona.

Process Ready for Exploitation CHLORINATED TURPENTINE

A process for the production of Chlorinated Turpentine has been developed at the Regional Research Laboratory, Hyderabad. A pilot unit has been set up and has been in operation in the Laboratory.

Chlorinated turpentine is a viscous product containing about 68 per cent chlorine. It is obtained by bubbling chlorine gas through turpentine oil in a reaction vessel at low temperature. The process of manufacture has been covered by Indian Patent No. 52338.

Chlorinated turpentine and its formulations in the form of kerosene oil solutions, water-dispersible pastes and powders compare favourably with DDT in their action against house-flies, mosquitoes, cockroaches, and grain pests.

Parties desirous of undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation of India, Mandi House, New Delhi-1.

Council of Scientific & Industrial Research New Delhi

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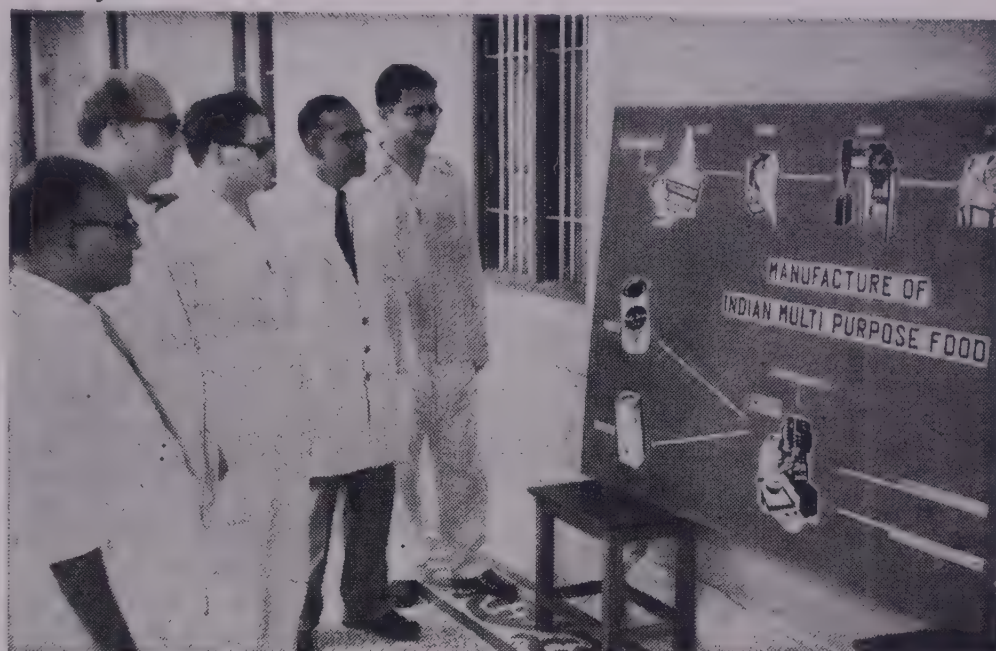


A Fortnightly News Bulletin

NEW DELHI-VOL. 8, NO. 10, MAY 24, 1958
JYAISTHA 3, 1880

PRODUCTION OF MPF Unicef Representatives visit CFTRI

Dr. G. Sicault, Deputy Executive Director (Planning), Unicef and Dr. T. C. Davis, Area Chief, Unicef visited the Central Food Technological Research Institute, Mysore, in April 1958, to discuss the question of assistance for large-scale production of Multipurpose Food (MPF). They examined the working of the one-ton/day unit installed at the Institute and had discussions with the Director and the technical staff. Dr. Sicault expressed his appreciation of the quality of MPF produced in the Institute.



CFTRI, MYSORE—Unicef representatives examining the flow diagram of MPF manufacture

POST-GRADUATE TRAINING IN PHARMACOLOGY

A six-week *Refresher Course in Pharmacology* has been organised for the benefit of veterinary teachers (deputed from State Governments) at the Central Drug Research Institute, Lucknow.

The course commences on May 26, 1958 and includes 29 lectures and 18 practical demonstrations. In addition, there will be practical classes for training in pharmacological methods.

FINANCE SUB-COMMITTEE RECONSTITUTED

The Governing Body of the Council has reconstituted the Finance Sub-Committee of the CSIR for a period of one year with effect from April 1, 1958. The committee consists of the following: Shri Kasturbhai Lalbhai (*Chairman*), Lala Shri Ram, Shri J. J. Ghandy, Dr. J. C. Ghosh, Director-General, Scientific & Industrial Research, Financial Adviser to CSIR (*Members*), and Secretary, CSIR (*Secretary*).

Personal

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been nominated a member of the Executive Committee of the Board of Directors of the *United States Educational Foundation in India*.

*DR. I. C. CHOPRA has been appointed Officer-in-charge, RRL, Jammu & Kashmir, with effect from Dec. 1, 1957.

*DR. M. HABIBULLAH has been appointed Senior Scientific Officer: Grade II, RRL, Jammu & Kashmir, with effect from Dec. 1, 1957.

*DR. R. G. KHALSA, Senior Scientific Officer, CSIR Secretariat, New Delhi, relinquished charge of his post with effect from Jan. 30, 1958.

*DR. K. S. G. DOSS, Director, CECRI, Karaikudi, left Delhi on

May 11, 1958 on a two-weeks' tour of Japan, as a member of a delegation (sponsored by the Development Council for Heavy Chemicals—Alkalis), to inspect the operation and manufacture of chlor-alkali plants in Japan.

*SHRI R. K. GUPTA, Senior Scientific Assistant, CGCRI, Calcutta, left for Czechoslovakia on March 13, 1958 for practical training in *Manufacturing Techniques of Crystal and Semi-Crystal Glass* and *Production of Glass Chatons* under the India-Czechoslovakia Exchange Programme for 1957-58.

*DR. B. MUKERJI, Director, CDRI, Lucknow, has been nominated Chairman of the *Pharmacopoeia Committee* of the Union Ministry of Health.

*DR. B. MUKERJI has been nominated Chairman of the *Scientific Research Committee*, Uttar Pradesh.

(Contd. on p. 4, col. 1)

B R I E F S

Research Workers' Conference

Research workers engaged in different fields of building research in India met in Conference at the Central Building Research Institute, Roorkee on May 1-2, 1958. Representatives of national laboratories, research institutes and universities participated in the discussion.

The conference reviewed the progress of building research in India and took stock of available research equipment and workshop facilities in the laboratories. Problems of liaison and information were also discussed.

Refining of Cottonseed Oil

An efficient process for the refining of cottonseed oil has been developed at the Department of Chemistry, University of Delhi, under a CSIR research scheme.

The process (Indian Patent No. 61773) involves preliminary treatment of cottonseed oil with borax or like material which forms an oil-insoluble complex with gossypol and other pigments present in the oil thereby rendering the oil amenable to normal refining.

Further data on the economics of the process are being collected under a development project sanctioned by the National Research Development Corporation. The work is being continued at the Shri Ram Institute for Industrial Research, Delhi.

Mineral Beneficiation

The proceedings of the symposium on *Mineral Beneficiation & Extractive Metallurgical Techniques*, held at the National Metallurgical Laboratory, Jamshedpur, in February 1957 have been published as a Special Issue (1957) of the *Indian Mining Journal*.

The 362-page issue (Price Rs. 15 per copy) includes the opening address by Shri J. J. Ghandy, Chairman, Executive Council, NML, Jamshedpur, inaugural address by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, and 52 technical papers presented at the symposium, with discussions; a brief note on sintering by Sir Charles Goodeve is also

incorporated. The papers included are: Efficiency of Iron Blast Furnace (J. S. VATCHAGANDHY, S. VISVANATHAN & V. G. PARANJPE); The National Metallurgical Laboratory in the Development of Mineral Beneficiation and Extractive Metallurgical Techniques (B. R. NIJHAWAN); Manganese Ore Beneficiation Plants for India (P. I. A. NARAYANAN); Beneficiation of Manganese Ores (HARISHCHANDRA, B. S. KARKARE & S. K. BOROOAH); The Heavy Media Separation Plant at Dongri Buzurg Mine (C. P. MANGANESE ORE Co., LTD); Ore Dressing in the Mineral Development Programme of India (H. R. DEWAN); Pyrometallurgical Beneficiation of Low-grade Manganese Ores (D. D. BHUPTANI); Beneficiation, Leaching and Manganous Sulphate Recovery from Pyrolusite type Ores (B. J. P. WHALLEY, D. E. PICKETT, R. F. PILGRIM & T. R. INGRAHAM); Custom Mills for Manganese Beneficiation (V. S. PRADHAN & H. R. DEWAN); Electrolytic Manganese and Manganese Dioxide from Low-grade Indian Ores (T. BANERJEE, H. K. CHAKRABARTI, B. C. KAR & N. DHANANJAYAN); Concentration of Indian Chrome Ores by Ore-dressing Methods (P. I. A. NARAYANAN & S. K. BANERJEE); Chemical Beneficiation of Indian Chromites (M. C. SEN & A. B. CHATTERJEE); Pyrometallurgical Beneficiation of Low-grade Chrome Ores (N. J. WADIA); Titanium Minerals and their Beneficiation (WILLY K. FINN); Differential Magnetization of Leucoxene (R. KRISHNASWAMY); Studies on Travancore Beach Sands (P. VISWANATHAN); Some Aspects of Titanium Metallurgy (P. P. BHATNAGAR & T. BANERJEE); Electrolytic Production of Titanium (H. N. SINHA & D. SWARUP); Indian Manganese Ores and their Thermal Beneficiation for Ferromanganese (B. R. NIJHAWAN); The Chemistry of Bayer Process as applied to the Ranchi Bauxite (M. S. THAKAR); Bayer Process in the Manufacture of Alumina from the Ranchi Bauxite (V. V. SHAH); Electrolysis of Fused Anhydrous Aluminium Chloride and Chlorination of Salem Bauxite (E. G. RAMCHANDRAN); Extraction of Uranium and Thorium and Pyrometallurgical Processing of Reactor Fuel and

Blanket Materials (BRAHM PRAKASH); Recent Trends in the Methods of Extraction of Uranium from Low-grade Ores (JAGDISH SHANKAR); Chemical and Electrolytic Reduction Methods for the Production of Uranium (S. K. KANTAN, N. SRINIVASAN & G. S. TENDOLKAR); An Integrated Plan for Copper and Sulphur Extraction from Copper Pyrites (G. C. MITTER); Cupro-nickel Manufacture as a By-product of Copper-smelting Process (R. N. KHARE); Electrolytic Extraction of Beryllium Oxide from Beryl (P. B. CHAKRAVARTY & T. BANERJEE); Electrolytic Recovery of Lead and Antimony from Lead-Acid Battery Wastes (B. B. DEY, V. ARAVAMUTHAN & P. R. RAJAGOPALAN); Electrolytic Extraction of Zinc from Low-grade Ores (INDRA SANGHI); Lead-Zinc Concentration Practice at Zinc Corporation and New Broken Hill (C. W. THOMAS); Ore Beneficiation at Zawar Mines (S. N. MUKHERJEE); Lead Smelting and Refining Practice at Tundoo (JOHN HARDINGE MACKERTOON); Recent Developments in the Extraction and Refining of Lead at Port Pirie (FRANK A. GREEN); Lead Oxide in Molten Slags (T. C. M. PILLAY & F. D. RICHARDSON); Metallurgical Practice at Nundydroog Mines (C. R. V. NARASAPPA); Beneficiation of Salem Iron Ores and their Reduction with South Arcot Lignite (C. V. S. RATNAM & T. N. BALACHANDRAN); Recent Trends in Coal Preparation and Washing (A. LAHIRI & G. G. SARKAR); Cyclone Washer for Coal Cleaning (A. K. CHAKRAVARTY, G. G. SARKAR & A. LAHIRI); Choice of Corrosion Resisting Materials in Extraction of Metals (K. P. MUKHERJEE and A. K. LAHIRI); Sintering of Iron Ore Fines, and Raw Materials for Bhilai Steel Plant (G. P. MATHUR, G. V. SUBRAMANYA & P. I. A. NARAYANAN); Oxygen in Pyrometallurgical Techniques (J. L. HARRISON); Manufacturing Pig Iron, Ferroalloys and Chemicals in Electric Furnaces (R. A. P. MISRA); Application of Physico-chemical Principles in Extraction Metallurgy (T. BANERJEE & P. P. BHATNAGAR); Microscopical Examination of Gold-smelting Products (A. B. EDWARDS); Importance of Microscopic Studies

(Contd. on p. 4, col. 1)

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory,
Jamshedpur

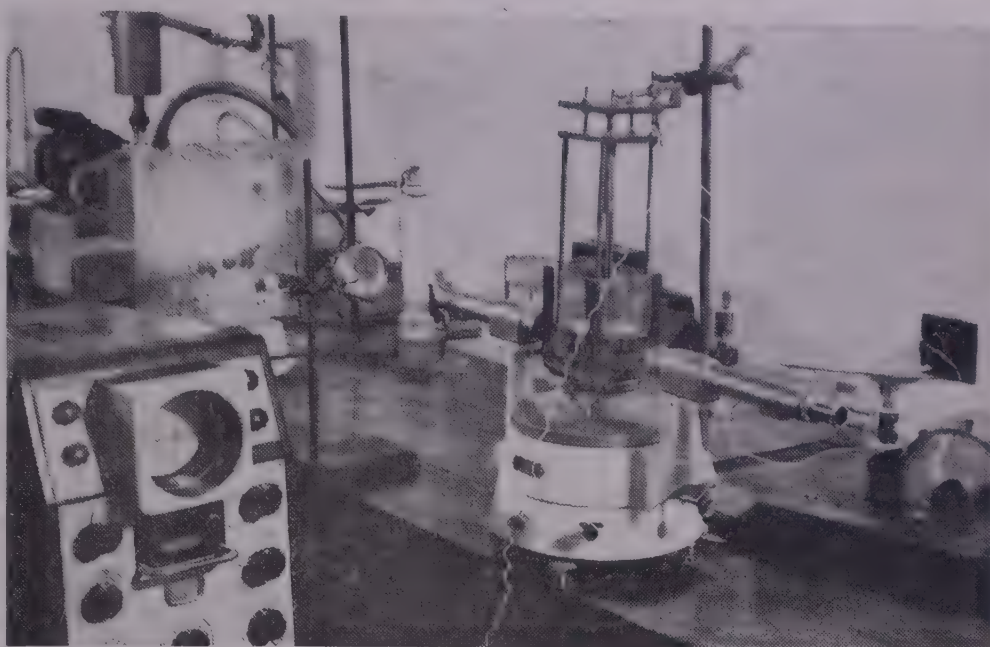
Elastic Constants of Metals and Alloys—An apparatus for the determination of elastic constants of metals and alloys using ultrasonic excitation has been set up at the Laboratory. The components of the apparatus (excepting the spectrometer) were designed and fabricated in the Laboratory.

The method followed is to determine the resonance frequencies corresponding to various modes of oscillation of thin sheets of metal by excitation of specimens by an acoustically coupled piezo-electric quartz wedge, driven by a continuously variable-frequency valve oscillator. The resonance is determined by the Debye-Sears effect; the frequency is ascertained by a frequency meter. The method is suitable for the determination of the elastic constants of dilute alloys and pre-stressed metals and alloys. Transformations in the solid state, like age-hardening, can also be studied with the help of the apparatus.

Central Food Technological
Research Institute, Mysore

Biogenesis of Ascorbic Acid—Investigations on the development of ascorbic acid in germinating seeds of *Sesbania grandiflora* Pers. show that appreciable amounts of the acid are produced during germination. The amount of acid produced is comparatively much more than that reported for other leguminous seeds except those of green gram. The cotyledons of germinated seedlings do not retain ascorbic acid on storage.

Ascorbic Acid Oxidation—The customary method of preparing ascorbic acid involves the use of glass-distilled water and vacuum concentration. The use of water distilled in copper vessels catalyses the aerobic oxidation of ascorbic acid.



NML, JAMSHEDPUR—Apparatus designed at the Institute for the determination of elastic constants

Investigations have revealed that addition of ethylenediamine tetraacetate (EDTA) in small amounts to acidified ascorbic acid solutions protects the acid against copper-catalysed oxidation. However, under low acidities, excess of EDTA promotes oxidation, the rate of oxidation being enhanced by buffering the solution.

Central Electro-chemical Research
Institute, Karaikudi

Redoxokinetic Titration—An electro-analytical technique, based on the application of 'Redoxokinetic Effect' discovered by Dr. K. S. G. Doss, has been evolved for the precise determination of end-points in volumetric titrations. The accuracy attainable in ferrous-permanganate titrations at concentrations of 0.02N is ± 0.4 per cent.

Central Road Research Institute,
New Delhi

Economic Design of Road Pavements—The riding quality of flexible pavements deteriorate progressively as a result of surface deformation. The deformation is pronounced in water-logged areas and in areas of high traffic intensity.

In the method usually adopted for road construction, the embank-

ment is exposed to the monsoon for compaction; after rolling, a crust of hard stone is laid to a thickness of about 8 inches. Investigations have shown that embankments compacted in this manner at low density have poor bearing capacity; the bearing capacity decreases further under water-logged conditions. Investigations have also shown that a thickness of about 20 inches of pavement is necessary to meet the conditions of sub-grade and traffic intensity. This will entail considerable costs in road construction.

Research work at the Institute has revealed that the bearing capacity of soil increases with density, even under adverse moisture conditions, and a part of the pavement thickness can be replaced by compacted soil. If the top 12 inches of embankment is compacted at fairly high density (using 8-10 tons power roller), the usual thickness of 8 inches of hard stone crust would become adequate and considerable saving in construction cost is possible. As the thickness of pavement required in water-logged areas is comparatively high, the saving in cost which will accrue as a result of replacing a part of the hard crust by compacted local soil will be substantial.

PERSONAL

(Contd. from p. 1, col. 3)

*DR. A. N. KAPPANNA, Assistant Director-in-charge, CSRI, Bhavnagar, has been appointed Director of the Hindustan Salt Co. (Private) Ltd., Jaipur.

*SHRI L. J. BARRACLOUGH, Mining Adviser, National Coal Development Corporation (P. Ltd., Ranchi, has been nominated a member of the Local Planning Committee of the Central Mining Research Station, Dhanbad.

*DR. A. P. MITRA, Secretary, Radio Research Committee, has been nominated member of the URSI Sub-Commission Ve on Frequency Allocation.

*SHRI KAMALESH RAY, Officer-on-Special Duty, CSIR Secretariat, New Delhi, has been awarded the Meghnad Saha Popular Science Prize for his essay on *The Food and Population Problem in India*.

*SHRI S. KRISHNAN, Senior Scientific Officer, NPL, New Delhi, has been awarded the Chawla Prize for his paper on *Stress Distribution in Thin Walled Wide Flanged Beams* published in the *Journal of the Aeronautical Society of India* during 1956.

MINERAL BENEFICIATION

(Contd. from p. 2, col. 3)

in Mineral Dressing (N. N. SUBRAMANIAN, P. DHARMA RAO & P. I. A. NARAYANAN); A Phase Exchange Process for Concentration of Brannerite from Low-grade Ores (R. KRISHNASWAMY, J. Y. SOMNEY & V. D. CHAPNEKAR); Collecting Strength of Unsaturated Fatty Acids in Mineral Flotation (N. R. SRINIVASAN, V. RAMACHANDRAN & R. K. RAMAMURTY); The Design, Lay-out and Running of Mineral Dressing Plants (K. K. MAJUMDAR); Synthetic Water-soluble Polymers as Flocculating Agents (R. B. BOOTH, J. E. CARPENTER & H. HARTJENS); A new Theory of Ore Sampling (PIERRE M. GY); and Some Research Problems and Techniques in Flotation Studies (JOHN S. CARR).

PATENTS &

Applications Filed

63659: An improved vacuum tester for canned foods—J. S. Pruthi, Girdhari Lal & S. K. Lakshminarayana, CFTRI, Mysore.

63685: A process for the manufacture of light constructional material such as hard boards, laminates, blocks or the like—V. N. Badami, C. S. B. Nair, A. N. Basu & A. Lahiri, CFRI, Jealgora.

63735: A process for the preparation of mycobacillin, an antifungal antibiotic to combat fungal infections—S. K. Majumdar & S. K. Bose, Calcutta University, Calcutta.

63736: A liquid-liquid extraction procedure for the separation of niobium-tantalum oxide mixtures—B. Sarma & J. Gupta, NCL, Poona.

Application Filed in France

759965: Improvements in or relating to the preparation of costus root oil and the products thereof—G. R. Kelkar, S. C. Bhattacharyya, NCL, Poona.

Application Filed in U.K.

11417/58: A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Applications Accepted

59630: An improved process of making bricks from sticky clays—N. C. Majumdar & N. K. Patwardhan, CBRI, Roorkee.

59927: A process for the preparation of pentadecane-1:15-dicarboxylic acid or its ester suitable for the preparation of dihydrocivetone—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

59978: Electrowinning of antimony—B. B. Dey, V. Aravamudan & P. R. Rajagopalan, CECRI, Karaikudi.

60921: Improvements in the method for manufacture of ether—V. V. Deshpande, A. Ramalingam

PROCESSES

& N. R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

Process Ready for Exploitation

SYNTHETIC TANNING MATERIALS

Sulphonated phenol-aldehyde or ketone condensation products do not find favour in trade as tanning materials since the leathers tanned with them assume dark colour.

The Central Leather Research Institute, Madras has worked out a process by which tanning materials of very light colour can be prepared utilizing dark coloured sulphonated condensates, particularly sulphonated 'Novolaks'. The syntans prepared by the process can be used as such and in combination with vegetable and mineral tanning agents for tanning.

Details of the process will be made available free of charge to interested parties by the Director, CLRI, Adyar, Madras.

Process Exploited

The CGCRI process for the production of *Mica Insulating Bricks* (Indian Patent No. 48667) has been leased out for commercial exploitation to M/s. Mohan Mica Exports Ltd., Goginenipuram, Gudur, Andhra.

Research Papers

ASSESSMENT OF HARD COKE REQUIREMENT IN INDIA—A. Lahiri, A. Ghosal & N. C. Sinha, CFRI, Jealgora. *Iron & Steel Rev.*, 1 (1958), 19-26.

RECENT TRENDS IN COAL PREPARATION AND WASHING—A. Lahiri & G. G. Sarkar, CFRI, Jealgora. *Indian Min. J.*, 5 (1957), Special Issue, 259-267.

CYCLONE WASHER FOR COAL CLEANING—A. K. Chakravarti, G. G. Sarkar & A. Lahiri, CFRI, Jealgora. *Indian Min. J.*, 5 (1957), Special Issue, 268-273.

REMOVAL OF MOISTURE FROM INDIAN LIGNITE—T. K. Hazra, A. K. Das Gupta & A. Lahiri, CFRI, Jealgora. *Trans. Instn Engrs India*, 38 (1958), 695-711.



A Fortnightly News Bulletin

NEW DELHI-VOL. 8, NO. 11, JUNE 14, 1958
JYAISTHA 24, 1880

SYMPOSIUM ON NATURE OF COAL

A symposium on *The Nature of Coal* is proposed to be held at the Central Fuel Research Institute, Jealgora from Feb. 9-11, 1959. The symposium is being arranged under the joint auspices of the Central Fuel Research Institute, the Institute of Fuel (India Branch) and the Institution of Chemists, India.

The symposium will be held in the following six sessions:

- (1) Origin and systematics of coal.
- (2) Petrographic and X-ray studies.
- (3) Ultra-fine structure—
— Sorption of polar and non-polar liquids; heat of wetting; surface area; and solvent extraction.
- (4) & (5) Coal constitution:
Physical methods—Density; reflectance; infra-red and ultra-violet spectroscopy; and other methods. *Chemical methods*—Oxidation; hydrogenation; hydro-genolysis; halogenation; sulphonation; functional groups; and pyrolysis.
- (6) Physico-chemical proper-ties—Electrical and mag-netic properties; mechanical properties; thermal proper-ties; behaviour on heating; and reactivity.

Representatives from U.S.S.R., Poland, Czechoslovakia, Germany, Japan, U.K., France, U.S.A., the Netherlands, Canada and Australia are expected to attend the symposium.

Those who wish to contribute papers (not exceeding 3000 words) to the symposium and participate in its deliberations are requested to

send the papers with abstracts so as to reach the Director, Central Fuel Research Institute, P.O. Jealgora (Dhanbad), Bihar not later than October 31, 1958.

Advance copies of communica-tions accepted will be provided to those who enrol themselves for participation in the symposium.

Personal

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been nominated Chairman, *India Section* of the *Electrochemical Society*, for 1958-59.

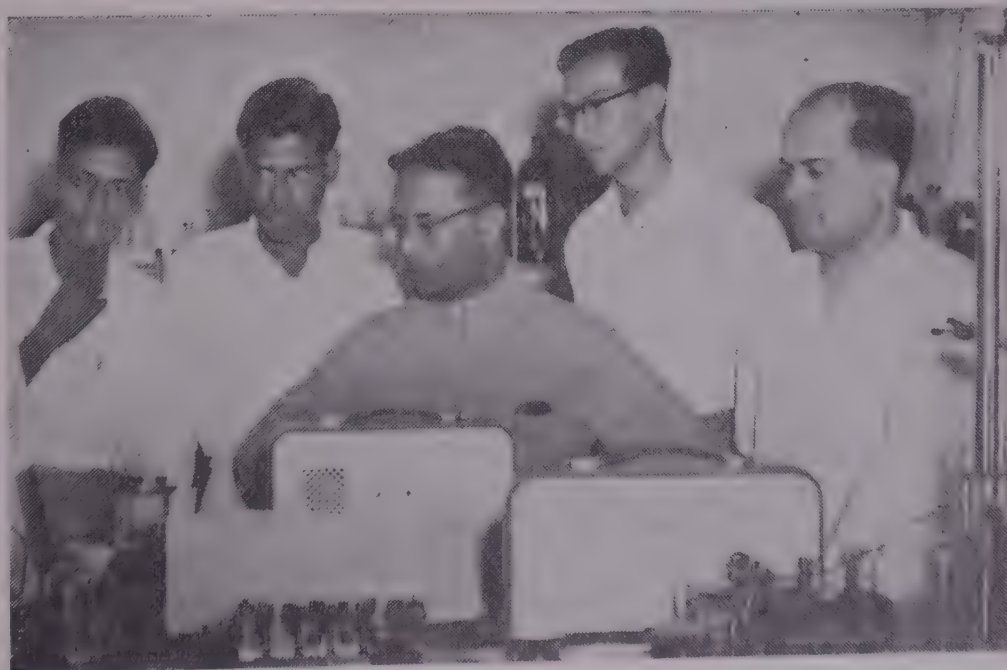
*SHRI K. R. RAMANATHAN, Asstt. Editor, Publications Directorate, CSIR, has been promoted as Senior Scientific Officer: Grade I with effect from May 26, 1958.

*SHRI R. C. SAWHNEY, Asstt. Editor, Publications Directorate, CSIR, has been promoted as Senior Scientific Officer: Grade I with effect from May 26, 1958.

*SHRI T. VENKATACHARYALU has been appointed Junior Scientific Officer, CBRI, Roorkee, with effect from April 14, 1958.

Vice-President's Visit

Prof. Humayun Kabir, Vice-Presi-dent, CSIR, and Union Minister for Scientific Research & Cultural Affairs, visited the Central Leather Research Institute, Madras and the Central Electrochemical Research Institute, Karaikudi on May 28 and May 29, 1958 respectively. He went round the different divisions of the Institutes and evinced special inte-
rest in the demonstration of the application of 'Redoxokinetic Effect' discovered by Dr. K. S. G. Doss, Director, CECRI, Karaikudi.



CECRI, KARAIKUDI— Prof. Humayun Kabir, Vice-President, CSIR, watching the set-up for demonstrating the application of 'Redoxokinetic Effect'

B R I E F S

Training in Preparation and Application of Mud Plaster

A seven-day course of training for village level workers in the preparation and application of mud plaster to walls has been organised in the Central Building Research Institute, Roorkee. The training includes a study of simple methods of soil selection, testing, and preparation and application of mud plaster developed in the Institute. A questionnaire on various aspects of mud plaster application has been evolved, and the workers are instructed to interpret the information obtained in reply to the questionnaire. The first batch of workers, coming from Saharanpur, have completed their course; and it will be followed by other batches of trainees. The Institute will keep under observation the work of the trainees in the village after the training.

Indians Abroad

The third and the fourth in the series of Directories (CSIR News, Vol. 8, No. 7, p. 6) comprising *Business Administrators & Accountants* (Series B & A, No. 1) and *Medical Personnel* (Series M, No. 1) have been published. Copies of the publications are available from the National Register Unit, CSIR.

CSIR FELLOWSHIPS

The following have been awarded CSIR Fellowships for research in the schemes noted against their names.

Senior Fellowships :

1. SHRI P. K. MAITRA — *Vitamin B₁₂ in relation to the metabolism of some micro-organisms* (University College of Science & Technology, Calcutta).

2. SHRI A. K. GOSWAMI — *Investigation into mechanism of experimental hypercholesterolaemia* (Bengal Veterinary College, Calcutta).

3. SHRI V. NAGARAJAN — *Development of furfuryl alcohol and its condensation products for plastics, laminate, etc.* (Shri Ram Institute for Industrial Research, Delhi).

4. SHRI S. K. MAZUMDAR — *Large scale production of mycobacillin, a new antifungal antibiotic* (University College of Science and Technology, Calcutta).

5. SHRI D. V. G. L. NARASIMHA RAO — *Nuclear quadrupole moments* (Andhra University, Waltair).

Junior Fellowships :

1. SHRI ARABINDA GUHA — *Vitamin B₁₂ in relation to the metabolism of some micro-organisms* (University College of Science & Technology, Calcutta).

2. KUMARI P. D. ROY — *Respiratory activity of germinating rice embryo under different oxygen tensions and its relation to the auxin balance of the grain* (University College of Science & Technology, Calcutta).

3. SHRI K. VENKATARATHNAM — *Marine Geology* (Andhra University, Waltair).

4. SHRI R. S. SARVOTHAMA SHENOI — *Marine Geology* (Andhra University, Waltair).

Research Schemes Terminated

The following research schemes have been terminated with effect from the dates mentioned against them:

1. *Investigation on composite en-cast concrete and rail steel section*—K. S. Rangaswami, Indian Institute of Technology, Kharagpur (February 28, 1958).

2. *Isolation and study of the biologically important constituents of the venoms of cobra and Russels' viper*—Director, Haffkine Institute, Bombay (March 31, 1958).

3 & 4. *Biochemical studies on the action of mycobacillin on skin-pathogens both in vitro and in vivo; Studies on antifungal antibiotics*—Dr. S. K. Bose, University College of Science & Technology, Calcutta (April 30, 1958).

5. *Studies on vitamin A in fishes*—Dr. Homi R. Cama, Indian Institute of Science, Bangalore (April 30, 1958).

6. *Chemistry of plant chromosomes*—Dr. A. K. Sharma, University College of Science & Technology, Calcutta (April 30, 1958).

7. *Studies in the viscosity of cellulose solutions*—Dr. H. R. Chippakatti, Shri Ram Institute for Industrial Research, Delhi (May 31, 1958).

8. *Microscopical data and standard specifications for vegetable tanned sole leather*—M. Banerjee, Bengal Tanning Institute, Calcutta (May 31, 1958).

9. *Studies on plasticity and its relation to other physical and chemical properties of Indian clay*—D. Lahiri, University College of Science & Technology, Calcutta (May 31, 1958).

POST-GRADUATE ASSOCIATESHIP IN FRUIT AND VEGETABLE TECHNOLOGY

The Central Food Technological Research Institute has been conducting a diploma course in Fruit & Vegetable Technology since 1950. The course which was of one year's duration has been revised to one of two years' including 3 months' factory training from the 1957 session onwards and syllabus for the course has also been revised. The post-graduate Associateship awarded by the Institute has been recognised as equivalent to M.Sc. (agri.) of Poona University and M.Sc. of M.S. University of Baroda.

The 1958-60 course commences from August 1, 1958.

Qualifications for admission to

the course are: High class Degree of a recognised university in Chemistry or Agriculture with Chemistry as major subject. Preference will be given to M.Sc.'s and Honours Graduates who have studied Biochemistry and specialised in Chemistry of Foods.

Applications for admission should be made in the prescribed form obtainable from the Administrative Officer, Central Food Technological Research Institute, Cheluvamba Mansion, V. V. Mohalla, P.O. Mysore, along with the Prospectus of the course, and must reach his office, complete in every respect, before **July 7, 1958**.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory,
Jamshedpur

Beneficiation of Ferruginous Manganese Ore—A process for producing high grade manganese concentrates economically from ferruginous low grade manganese ores has been developed. The process is based on low temperature gaseous reduction followed by magnetic separation. The advantage of the process is that no external heating is necessary for reduction and the reduced material is obtained as a friable product which can be easily ground for subsequent magnetic separation.

Utilising this process a concentrate of 52 per cent. manganese with a Mn-Fe ratio of 7:1 has been obtained in 62 per cent. yield from a low grade ore from Joda (Keonjhar Dt., Orissa), assaying: Mn, 27.2; Fe, 21.2; SiO_2 , 7.53; Al_2O_3 , 7.43; and P, 0.09 per cent.

Proposals for putting up a pilot plant to beneficiate 600 tons/day of ore are under way.

Central Food Technological
Research Institute, Mysore

Rice Diet and Mineral Metabolism—The metabolism of nitrogen, calcium and phosphorus was studied in seven girls, 8—11 years in age, fed a poor vegetarian diet containing husked, undermilled and milled raw rice respectively. All the subjects maintained a positive nitrogen and phosphorus balance. Negative calcium balance was observed in three subjects on husked rice diet and in one subject on undermilled rice diet. The three subjects on milled rice diet maintained positive calcium balance.

Nutritive Value of Tapioca Macaroni—The nutritive value of tapioca macaroni (60 parts of tapioca flour, 15 parts of low fat groundnut flour and 25 parts of wheat semolina) was studied in a feeding experiment lasting six months on a group of thirty-two girls, 4—12 years in age, in comparison with that of rice diet as

control. Data on height, weight and red cell count of the control and experimental groups showed no significant difference. The experimental group showed a significantly higher rise in haemoglobin content than the control group. Seven children in the experimental group improved in nutritional status as compared to only three in the control group.

Central Building Research Institute,
Roorkee

Thermal Comfort Atlas—A thermal comfort atlas for 120 places covering all the states in India has been prepared. The atlas presents monthly charts of effective temperature, degree day, highest maxima, lowest minima, mean diurnal temperature range, prevailing wind directions, number of rainy days, rainfall, clearness factor of the sky, vapour pressure and average solar intensities.

The atlas is expected to give a precise climatic zoning of India and variation of comfort period during the year and prove of great use for designing buildings—K. R. Rao, G. N. Sharma & Sharafat Ali.

Indian Institute of Biochemistry &
Experimental Medicine, Calcutta

Enzyme of *Lieshmania donovani*—The presence of a sucrose-splitting enzyme in *L. donovani* has been indicated (CSIR News, Vol. 7, No. 14, p. 3). This enzyme has now been detected in cell-free extracts of the organism. Detailed investigations of the properties of the enzyme have shown that the enzyme is of a pure hydrolytic glycosidase type and splits sucrose into a mixture of glucose and fructose—A. N. Chatterjee.

Degree of Roughness of *Vibrio cholerae* Strains—A method for estimating the degree of roughness in *V. cholerae* strains has been evolved. The method consists in noting the degree of lysis in group II bacteriophage-inoculated broth cultures. The degrees of lysis is estimated by observing the degree of clearance of turbidity of

the inoculated cultures as seen in a photo-electric colorimeter. The degrees of smoothness and roughness are then determined by noting the difference between the growth-curves of a control culture and the phage-inoculated cultures — S. Mukerjee.

Sponsored Research

Iso-Oleic Acids of Vanaspati—Investigation were carried out on the iso-unsaturated acids of vanaspati and beef body and cow butter fats, since the high proportion of these acids in hydrogenated fats constitutes the essential difference between hydrogenated and natural fats.

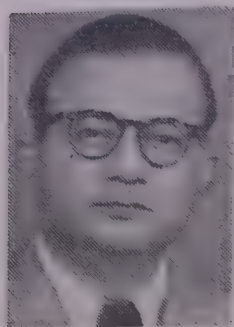
A method based on the technique of separation of urea adducts of fatty acids was used to fractionate the iso-oleic acids fractions of vanaspati and beef body fat. The yields in both the cases were comparable to those obtained by conventional methods. Petroselinic acid has been isolated using the same technique from coriander seed oil.

A method for the qualitative assay of dibasic acids, obtained by oxidation of the iso-oleic acid fraction, based on partition chromatography of these dibasic acids on silica gel, has been evolved. The solid iso-oleic acid fractions of vanaspati and of beef body and cow butter fats have been studied by this method and their composition (in terms of their *trans* octadecenoic acid content) has been determined.

The solid iso-oleic acid fractions of the fats examined have been established to be mixtures of *trans*-octadecenoic acids having double bond in the positions ranging from 7-8 to 12-13. Results obtained with cow butter and beef body fats have led to the additional evidence that vaccenic acid isolated from natural sources is not a homogeneous substance—V. N. Patwardhan, M. R. Subbaram & I. S. Shenolikar, Nutrition Research Laboratories, Coonoor.

Dr. S. A. Saletore

The appointment of Dr. S. A. Saletore as Deputy Director, Re-



gional Research Laboratory, Hyderabad has been announced (*CSIR News*, Vol. 8, No. 8, p. 1). He was born in Mangalore, South Kanara Dt. in 1904 where he had his education

up to the Intermediate. Dr. Saletore took his B.Sc. degree from the Banaras Hindu University in 1925, standing first in the examination. He joined the Indian Institute of Science, Bangalore in 1926 and obtained A.I.I.Sc. In 1929, he proceeded to U.K. (under a Government of India scholarship) for further studies at the Ramsay Laboratory of University College, London and later at Liverpool University. He was awarded Ph.D. degree while working with Prof. T. P. Hilditch.

On his return to India in 1933, he was associated with industrial concerns for about 9 years. Dr. Saletore was appointed Professor of Applied Chemistry, Nagpur University in 1942 with the additional duties of Director-in-charge of the Laxminarayan Institute of Technology. He was mainly responsible for developing the Institute into a post-graduate technological teaching institution. In 1950, Dr. Saletore joined the Central Laboratories for Scientific Research, Hyderabad (now RRL, Hyderabad) as Assistant Director and took an active part in developing the Laboratory.

Dr. Saletore is the author of over 50 publications in the field of chemical technology, particularly oils and paints, and has taken 8 patents.

He is a member of several scientific bodies and a founder member of the Institution of Chemical Engineers, India.

PATENTS & PROCESSES

Application Filed in U.S.A.

729252: *New stainless steels and methods of preparing them*—B. R. Nijhawan, P. K. Gupte, S. S. Bhatnagar & B. K. Guha, NML, Jamshedpur.

Application Filed in Holland

227077 Ned: *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Applications Accepted

57888: *Improvements in or relating to the production of hydroxy, alkoxy or aryloxy substituted aryl alkyl ketones*—J. L. Bose & R. C. Shah, NCL, Poona.

58868: *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

59712: *Electrolytic separation of pure lead from high-antimony*

lead alloys—B. B. Dey & P. B. Rajagopalan, CECRI, Karaikudi.

62751: *Manufacture of cellulose carboxyalkyl ethers*—C. D. Dhariyal & V. B. Chipalkatti, Shri Ram Institute for Industrial Research, Delhi.

Application Sealed

57267: *An improved process for the treatment of bamboo to further its utilization in the manufacture of pulp, paper, board or the like*—G. M. Vyas, R. V. Bhat & K. A. Chowdhury, Forest Research Institute, Dehra Dun.

Processes Exploited

The following CFTRI processes have been leased out for commercial exploitation:

(i) *Baker's Yeast* (non-patented) to M/s United Breweries Ltd., Bangalore.

(ii) *Manufacture of Composite Protein Food* (Indian Pat. No. 47580) to M/s Unichem Laboratories, Bombay.

RESEARCH PAPERS

VISCOSITY OF DILUTE SOLUTIONS OF LONG CHAIN POLYMER MOLECULES—H. L. Bhatnagar, A. B. Biswas & M. K. Gharpurey, NCL, Poona, *J. chem. Phys.*, **28** (1958), 88-90.

THE CRYSTAL STRUCTURE OF COPPER MANGANITE—A. P. B. Sinha, N. R. Sanjana & A. B. Biswas, NCL, Poona, *J. phys. Chem.*, **62** (1958), 291.

MEASUREMENT OF REFRACTIVE INDEX INCREMENT FOR MOLECULAR WEIGHT DETERMINATION BY LIGHT SCATTERING—C. I. Jose & A. B. Biswas, NCL, Poona, *J. Polym. Sci.*, **27** (1958), 575-577.

ENTROPY OF HAUSMANNITE TO SPINEL TRANSFORMATION—K. S. Irani, A. P. B. Sinha & A. B. Biswas, NCL, Poona, *Proc. phys. Soc. Lond.*, **71** (1958), 270.

HEAT OF WETTING OF PETROGRAPHIC AND INORGANIC CONSTITUENTS OF

COALS—S. R. Ghosh, J. N. Sharma, N. N. Das Gupta & A. Lahiri, CFRI, Jealgora, *J. Indian chem. Soc. industr. Edn.*, **20** (1957), 121.

EFFECT OF BLOCKING OF REACTIVE GROUPS ON THE CRITICAL OXIDATION AND IGNITION POINTS OF COALS—S. P. Nandi, K. A. Kini & A. Lahiri, CFRI, Jealgora, *J. Indian chem. Soc. industr. Edn.*, **20** (1957), 125.

BINDERLESS BRIQUETTING OF COALS—M. S. Iyengar, T. A. Subramanian, A. Ghosal & A. Lahiri, CFRI, Jealgora, *J. Inst. Fuel*, **31**, (1958), 108.

In the citation for CYLINDER LINER WEAR IN INTERNAL COMBUSTION ENGINE—T. Banerjee & A. K. Lahiri, CFRI, Jealgora, *East Met. Rev.*, 11 March, 1958. (*CSIR News*, Vol. 8, No. 8, p. 4.) CFRI, Jealgora stands corrected as NML, Jamshedpur.

A Fortnightly News Bulletin

NEW DELHI-VOL. 8, NO. 12, JUNE 28, 1958

ASADHA 7, 1880

MEETINGS

A meeting of the *Biophysics Research Committee* will be held at Calcutta on June 29, 1958 at 5.30 p.m. Dr. B. C. Roy, Chief Minister, West Bengal, will preside.

A meeting of the *Vanaspati Research Advisory Committee* will be held at the Central Food Technological Research Institute, Mysore, on July 3, 1958 at 3.00 p.m. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, will preside.

Personal

*The President of India has been pleased to re-appoint Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, a member of the Board of Directors of the *National Industrial Development Corporation (P) Ltd.* up to March 1959.

*SHRI A. KRISHNAMURTHI has been appointed to officiate as Editor (*Journal of Scientific & Industrial Research*), Publications Directorate, CSIR, with effect from May 7, 1958.

*SHRI A. K. BOSE has been appointed to officiate as Asst. Editor (*Wealth of India—Industrial Products*), Publications Directorate, CSIR, with effect from May 7, 1958.

*SHRI R. C. TIWARI has been appointed to officiate as Asst. Editor (*Vigyan Pragati*), Publications Directorate, CSIR, with effect from May 16, 1958.

*DR. S. K. BARAT has been appointed, on promotion, Senior Scientific Officer: Grade I, CLRI, Madras, with effect from March 3, 1958.

*SHRI N. SUBRAMANIAM has been appointed, on promotion, Senior Scientific Officer: Grade II, CLRI, Madras, with effect from March 3, 1958.

*DR. D. RAMASWAMY has been appointed, on promotion, Senior Scientific Officer: Grade II, CLRI, Madras, with effect from March 3, 1958.

*DR. K. N. SHAMA SASTRY has been appointed, on promotion, Senior Scientific Officer: Grade II, CLRI, Madras, with effect from March 3, 1958.

*SHRI J. B. RAO has been appointed, on promotion, Junior Scientific Officer, CLRI, Madras, with effect from March 3, 1958.

*DR. V. S. PADMANABHAN has been appointed Junior Scientific Officer, CLRI, Madras, with effect from March 26, 1958.

*SHRI RALLA SINGH has been appointed Civil Engineer, CBRI, Roorkee, with effect from April 19, 1958.

*DR. R. N. CHAKRAVARTI, Professor of Chemistry, School of Tropical Medicine, Calcutta, and Investigator-in-charge of CSIR scheme, left for Paris on June 17, 1958 under a programme arranged by the French Government. During his six months' stay in France he will work for some time on synthetic drugs at the *Institut du Radium*, Paris, and visit research institutes and drugs and essential oils manufacturing concerns.

*DR. B. MUKERJI, Director, CDRI, Lucknow, has been nominated a member of the Editorial Board of the *Journal of Medicinal and Pharmaceutical Chemistry*, Pennsylvania.

*DR. B. MUKERJI has been nominated member of the Committee set up by the Bombay Government to advise the Government on research programme of the Haffkine Institute.

*DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore, has been nominated a member of the *Technical Working Group* of the Union Ministry of Food and Agriculture.

*DR. V. SUBRAHMANYAN has been nominated a member of the *Central Committee for Food Standards*, Union Ministry of Health, for a period of 3 years with effect from June 1, 1958.

*DR. Y. NAYUDAMMA, Director, CLRI, Madras, has been nominated a member of the *Advisory Committee, Madras Branch* Office of the Indian Standards Institution (ISI).

*SHRI G. D. JOGLEKAR, Assistant Director, NPL, New Delhi, has been nominated a member of the *Sieves, Insulation and Tropic Proofing Sub-Committees* of the ISI.

*SHRI PREM PRAKASH, Assistant Director, NPL, New Delhi, has been nominated a member of the (i) *Calibration of Volumetric Glassware Panel* and (ii) *Ball & Roller Bearings Sectional Committee* of the ISI.

*SHRI N. N. DAS GUPTA, Assistant Director, CFRI, Jealgora, has been nominated Hony. Joint Secretary of the *India Section Committee* of the *Coke Oven Managers' Association*, U.K.

*SHRI R. M. KRISHNAN, Senior Scientific Officer, NML, Jamshedpur, has been nominated member and convener of the *Panel on Sampling Foundry Sands* of the ISI.

(Contd. on p. 2, col. 3)

BRIEFS

Evaporation Control

A considerable amount of water is lost from natural reservoirs of large area such as lakes and irrigation bunds by evaporation. Laboratory investigations have been in progress at the National Physical Laboratory, New Delhi, on evaporation control by covering water surface with a monomolecular film of cetyl or stearyl alcohol. A leaflet "Evaporation Control" giving the precautions to be observed in evaporation control experiments, written by Dr. L. A. Ramdas, Asst. Director, NPL, New Delhi has been published. The leaflet outlines in brief the physical basis for the control experiments and is useful to irrigation engineers undertaking large scale experiments in open reservoirs. Copies of the publication are available from the Director, National Physical Laboratory, Hillside Road, New Delhi.

National Register of Scientific & Technical Personnel—New Card System Introduced

The National Register Unit, CSIR, has evolved and adopted a new card system of registration of information regarding scientific and technical personnel. The card (size, 5 in. x 6½ in.) contains 21 classified items of information, with many sub-items, most of which are to be answered by the registrants by tick marks against the items. This system is expected to ensure unambiguous answers, which will facilitate quick classification of the personnel.

All scientific and technical personnel (including those who have registered previously) are requested to fill in the cards and register themselves in the National Register. The minimum qualification for registration is :Master's degree in science subjects or Bachelor's degree in specialised courses (e.g., agriculture, veterinary science) or Diploma in engineering or technology, or medical specialists with research or post-graduate qualification.

The prescribed cards for registration are available from the following organizations: —(1) All Employment Exchanges (both for unemployed and employed persons); (2) Public Service Commission offices of Jammu and Kashmir, Assam, Panjab, Kerala, Madras, Bihar, W. Bengal, and Bombay; (3) All National Laboratories of CSIR; and (4) National Register Unit, CSIR, Old Mill Road, New Delhi.

CDRI Photostat Service

A Photocopy Service Unit has been set up at the Central Drug Research Institute, Lucknow for supplying photostat copies of articles from medical and other scientific publications available in the library of the Institute. Scientists, who wish to avail themselves of this service may write to the Director, Central Drug Research Institute, Chattar Manzil Palace, Lucknow, for details.

India's Role in IGY Programme

In a broadcast talk, delivered on June 4, 1958, Dr. K. S. Krishnan, Director, NPL, New Delhi and Chairman, Indian National Committee for IGY reviewed briefly the programme of observation and work undertaken by India in connection with the International Geophysical Year.

According to him, the programme, which was modest in the beginning, had become quite extensive and covered most of the fields included in the world programme for IGY. For purposes of this programme, India has been maintaining, in addition to the existing meteorological network, about sixty additional stations. A point of importance in India's participation in the programme is the fact that the geomagnetic equator passes through the south of India.

Dr. Krishnan traced the steps taken to help in the study of the surface and interior of the earth. He pointed out that a network of field stations was being maintained for work on a wide range of subjects relating to earth science such as geomagnetism, determination of latitudes and longitudes and glaciology, oceanography,

seismology and gravimetry. Similarly, several meteorological, ionospheric, auroral and airglow stations were engaged in the study of the atmosphere of the earth. Since the activity of the sun would be at its maximum during the International Geophysical Year, daily observations were being recorded both at Kodaikanal and Hyderabad. A station at Nainital was being set up to make precise optical tracking of the satellites using equipment loaned by the Smithsonian Astrophysical Laboratory in U.S.A. Several stations were also making measurements of particulate airborne fission products at ground level.

PERSONAL

(Contd. from p. 1, col. 3)

*DR. S. M. DAS GUPTA, Regional Liaison Officer (Calcutta Region), has been elected member of the *Institution of Chemists (India)*.

*DR. M. L. KHANNA, Senior Scientific Officer, NPL, New Delhi, has been elected a Fellow of the *Institute of Petroleum*, London and a member of the *American Association for the Advancement of Science*, Washington.

*DR. A. K. KAMAL, Senior Scientific Officer, CEERI, Pilani, has been nominated a member of the *Capacitors, Resistors & Miscellaneous Parts and Nomenclature and Graphical Symbols Sub-Committees* of the ISI.

*DR. V. N. SHARMA, Senior Scientific Officer, NBG, Lucknow, has been awarded the D.Sc. degree by the Allahabad University for his thesis, *Studies in the Constitution of Holarrhena Alkaloids and Some Other Plant Constituents*.

The thesis deals with (1) the degradation of *Holarrhena* alkaloids; (2) chemical constitution of compounds, isolated from *Didymocarpus pedicellata* (Patharphori), *Vitex peduncularis* Wall. (Nagbail), *Mallotus phillipinensis* Muell Arg., *Tinospora cordifolia* Miers. (Gilo) and *Semecarpus anacardium* Linn. f.; and (3) assigning of tentative structures for the isolated compounds.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory,
Jamshedpur

Deposition of Copper on Steel Wires—Experiments were carried out for deposition of copper on mild steel wire and several big coils were successfully plated with copper. The copper deposits were adherent and stood the bend test. These coils were further tested at a local factory by drawing them through dies. The copper deposit did not peel off and became quite bright. Further work to improve the deposit is in progress.

Low-Shaft Furnace Project—A low-shaft furnace pilot plant for the production of commercial grades of pig iron utilizing non-coking coals and carbonized lignite is under erection at the National Metallurgical Laboratory, Jamshedpur. The plant comprises a low-shaft furnace (capacity, 15 ton/day) with equipment for handling, crushing, briquetting, gas cleaning and a boiler.

Central Fuel Research Institute,
Jealgora

Ion-Exchanger from High Sulphur Coals—A process for the manufacture of carbonaceous ion-exchanger by sulphonation of coal which is an improvement over the earlier process (Indian Pat. No. 47446) has been developed. The salient feature of the process is that it utilizes all the organic sulphur present in high sulphur coal and converts it into an exchangeable form without using sulphuric acid. The process consists in oxidizing high sulphur coals in a fluidized or static bed with or without the use of an oxidizing agent like nitric acid, nitric oxides, potassium permanganate, hydrogen peroxide, etc. at 30-300°C. By using Ledo coals of Assam (organic sulphur, 5-5.5 per cent) an ion exchanger with exchange capacity of 160 milliequivalent and above per 100 g. of coal has been prepared. The process is covered by the Indian



NML, JAMSHEDPUR—Low-shaft furnace and other ancillary plants under installation at the Institute

Patent No. 61771—M. S. IYENGAR,
S. GUHA, M. L. BERT & A. LAHIRI.

Central Drug Research Institute,
Lucknow

Hayatin Methiodide—Pharmacological studies on hayatin methiodide, a potent muscle relaxant, have revealed that the drug blocks the transmission of nerve impulses by competition with acetyl choline. In other pharmacological properties, the drug is similar to α -tubocurarine chloride. Low doses of the drug have little effect on blood pressure; in higher doses, however, the drug causes a fall. Respiration is depressed in low doses and complete paralysis is caused when the drug is administered in high doses. Gastric and bile secretions and gastric acidity are increased by intrave-

nous injection. In low doses, the drug has no ganglion blocking action while in higher doses, the blocking action becomes perceptible. Intra-dermal injection of the drug elicited typical histamine response with redness and dilatation of blood vessels at the site of injection.

Central Electrochemical Research
Institute, Karaikudi

Calibration of Spectrophotometers—The usual methods of calibration of the wavelength scale of spectrophotometer with standard solutions or plastic gelatine or glass filters of known absorption bands are associated with practical difficulties and sources of error.

A more reliable and relatively error-free method of calibration

based on "null principle" and using the 'isobestic points' of indicators has been evolved. An acidic and a basic solution made out from equal amounts of the same stock solution of an indicator of known isobestic point are taken and the difference in their transmittancy at different wavelengths is observed. The unknown wavelength where $\Delta T_s \rightarrow 0$, corresponds to the known isobestic point for the indicator.

Sponsored Research

Atomisation of Fluids—The factors contributing to the atomisation of fluids by pressure nozzles and spinning disk atomisers have been investigated.

Of the three types of pressure nozzles (swirl chamber, swirl disk and spiral thread), swirl chamber nozzle gives a hollow cone wide spray, swirl disk nozzle a compact, dense and uniform spray, and spiral thread nozzle a penetrating, less uniform spray. The effect of number of liquid entries, number of threads per inch of spiral, and mixing zone angle on atomisation, using spiral thread type nozzle has been investigated and design details have been worked out. A wide angled spray with finer atomisation is obtained by increasing the number of threads per inch of spiral. Increase in mixing zone angle results in a compact and coarsely atomised spray. Experiments with molten naphthalene show that atomisation is improved by decreasing surface tension and viscosity. Decrease of surface tension alone, keeping viscosity and density constant, results in a compact spray and finer atomisation.

In the case of radially vaned disk atomiser, the flow pattern of liquid indicates that the speed at which the vane is completely wetted is different for different feed rates.—M. NARSINGA RAO, V. SUBBA RAO, J. V. S. MANI & V. SRINIVAS, Indian Institute of Technology, Kharagpur.

PATENTS & PROCESSES

Applications Filed

63865: *A tensioning screw jack*—G. S. Ramaswamy & S. K. Narayana, CBRI, Roorkee.

63904: *A process for recovering zirconium dioxide from zircon*—P. B. Chakravarti & T. Banerjee, NML, Jamshedpur.

Applications Filed in Germany

C 16 460 IVa/23 a: *Improvements in or relating to the preparation of costus root oil and the products thereof*—G. R. Kelkar & S. C. Bhattacharyya, NCL, Poona.

C 16 785 IV b/12 c: *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Applications Filed in France

764.147: *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

766718: *A process for the preparation of tridecane-1:13-dicarboxylic acid or its ester, suitable for the preparation of exaltone (cyclopentadecanone)*—B. B. Ghatgey, U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Application Filed in Switzerland

57921: *Improvements in or relating to the preparation of costus root oil and the products thereof*—G. R. Kelkar & S. C. Bhattacharyya, NCL, Poona.

Application Filed in U.K.

12323/58: *New stainless steels and methods of preparing them*—B. R. Nijhawan, P. K. Gupte, S. S. Bhatnagar & B. K. Guha, NML, Jamshedpur.

Applications Accepted

61020: *Continuous devolatilisation of fuels on a moving bed*—A. Lahiri, S. K. Das Gupta, N. N. Das Gupta & A. K. Bose, CFRI, Jealgora.

61774: *A process for the manufacture of magnetic oxide of iron*—

K. C. Srivastava & O. P. Kulsreshtha, NPL, New Delhi.

61801: *An electro-chemical process for the production of aluminium hydroxychloride*—A. Jogarao & B. A. Shenoy, CECRI, Karaikudi.

62497: *A process for the fractionation and isolation of the individual cardioactive glycosides of digitalis*—M. M. Dhar, N. M. Khanna & M. L. Dhar, CDRI, Lucknow.

Applications Sealed

57268: *A process for the preservation of sweet toddy (Neera) obtained from palm trees*—P. S. Sarma, University of Madras, Madras.

58244: *An improved method for the production of titanium tetrachloride from ilmenite*—P. P. Bhatnagar & T. Banerjee, NML, Jamshedpur.

Process Ready for Exploitation

BLACK INKS

A process for producing stabilized duplicating, printing and allied black inks has been developed at the National Physical Laboratory, New Delhi.

The speciality about the process consists in the addition of substances which stabilize the dispersion and maintain the homogeneity of the inks over long periods. The process is simple and easy to operate and can be adopted for small as well as large scale production. All the ingredients required in the formulations for various types of inks, except carbon black, are available in the country.

The economics of the process has been established by working a pilot plant of 1,000 lb. per day capacity, for more than five years. Inks manufactured in this plant have been widely accepted in the market.

Parties desirous of undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation of India, Mandi House, Lytton Road, New Delhi-1.



CGCRI OPTICAL GLASS PLANT GOES INTO PRODUCTION

We are glad to announce that the Central Glass & Ceramic Research Institute, Calcutta, has started the production of optical glass. This was revealed by Prof. Humayun Kabir, Minister for Scientific Research & Cultural Affairs, while explaining to the press representatives the achievements of the Institute, on the occasion of his visit to the Institute on July 7, 1958. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, was also present.

Optical glass, an important strategic material has so far not been produced in India; the only country in Asia producing it is Japan. The process in practice in other countries is a closely guarded secret. Optical glass has been appropriately called the 'eye' of the defence forces; most of the fire control and locating instruments used in defence are equipped with optical devices. Optical glass has extended human vision from the macroscopic to the microscopic. It is difficult to imagine what progress medical science would have made without the microscope; and possibly, the science of astronomy, surveying, photography, cinematography, etc., would have almost been unknown. India's annual needs of optical glass are 5-7 tons.

The importance of optical glass was realised in India during World War II mainly on account of the difficulty of getting supplies from England which used to be the principal supplier. It was at that time that the Government of India approached the U. K. Government for transferring the technical "know-how" to India. These negotiations, however, did not lead to any practical results. In the meantime, the

Council of Scientific & Industrial Research took the initiative and even financed schemes for working out processes for the production of optical glass. These also did not lead to any success. The Government of India opened up negotiations with almost all optical glass manufacturing countries, particularly U.K., U.S.A., East and West Germany, France and Japan; all the firms contacted asked for large amounts of money—from Rs. 15 to 30 lakhs—for providing the technical "know-how" and equipment.

In the meantime, Dr. Atma Ram, Director, CGCRI, Calcutta, visited U.S.A. and was a guest worker in the American Government Optical

Glass Plant attached to the National Bureau of Standards in 1948. After his return to India in 1949, he submitted at the instance of the Director-General, Industries and Supplies, a project report for the production of 30 tons of optical glass per annum on the basis of his knowledge and experience gained at the Bureau; the scheme was later scaled down to 10 tons per annum, on account of the economy drive of the Government. No decision could be reached as commercial considerations were looming large in the discussion. More recently, the Russian Government have agreed to set up an optical and ophthalmic glass factory in India.

(Contd. on p. 4, col. 1)



CGCRI, CALCUTTA—Picture shows Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, presenting a slab of optical glass prepared in the Institute for the inspection of Prof. Humayun Kabir, Minister for Scientific Research & Cultural Affairs

B R I E F S

Raw Hides and Skins—Curing and Preservation

The proceedings of the symposium on *Raw Hides and Skins—Curing and Preservation*, held at the Central Leather Research Institute, Madras during March 28-30, 1957 have been published.

The publication contains several technical papers presented and discussed at the symposium. The papers included are: (1) Future Development of the Indian Tanning Industry (J. J. WALTERS); (2) Collection of Raw Goat Skins on Co-operative Basis (R. V. SOVANI); (3) Note on Collection of Raw Hides and Skins and Suggestions for Improved Methods (L. M. HIRA); (4) Supply of Quality Raw Hides and Skins to Tanners Co-operative Societies (C. V. GANGAL); (5) Raw Hides and Skins (N. S. MANI); (6) Export of Goat Skins (CALCUTTA HIDE AND SKINS SHIPPERS ASSOCIATION); (7) Brining Process of Curing—Its Merits and Demerits (S. C. NANDY); (8) Preservation of Indian Goat Skins for Export (M. DEMPSY & B. M. HAINES); (9) Raw Hides and Skins—Curing and Preservation (D. WOODROFFE); (10) Factors Affecting the Salting of Raw Hides and Skins and their Preservation (S. C. NANDY & S. N. SEN); (11) Some Aspects of Curing Practices (MINISTRY OF COMMERCE & CONSUMER INDUSTRIES); (12) Curing of Hides and Skins (M. K. BHAGWAT); (13) Some Considerations on the Utilisation of Bittern Salt in Curing (S. C. NANDY & S. N. SEN); (14) Pickling Hides and Skins as a Method of Preservation (M. K. BHAGWAT); (15) Preservation of Hides and Skins (S. N. SEN); (16) Preservative Efficiency of Common Salt in Admixture with Sodium Pentachlorophenate (S. C. NANDY & S. N. SEN); (17) Discussion on Curing and Preservation of Hides (B. R. SEN GUPTA); (18) Some Aspects of the Biochemistry of Raw Hides and Skins (S. M. BOSE); (19) Studies on the Prevention of Insect Damage to Hides and Skins (R. BHASKARAN & S. N. SEN); (20) Histological Study of the

Effect of Post-mortem changes on the Leather Forming Qualities of Calf Skin (S. K. SARKAR & S. K. MITRA); (21) A Note on the Damage Caused to the Skin of Cattle, Sheep, Buffaloes and Goats by Parasites (V. S. ALWAR); (22) Defects in Raw Hides and Skins and Suggestions for Improvement (DIRECTOR OF ANIMAL HUSBANDRY, ANDHRA PRADESH); (23) Parasitic Skin Diseases of Animals and their Effects (R. BHASKARAN); (24) Viral, Bacterial and Other Diseases Causing Damage to Live Hides and Skins (K. P. CHANDRASEKHARAN & B. NARASINGA RAO); (25) Certain Parasitic Infections of Cattle Involving the Skin (M. ANANTARAMAN); (26) Some Defects in Raw Hides and Skins and Suggestions for Their Improvement (B. N. SONI); (27) The Impact of Animal Diseases on Leather Manufacture (R. BHASKARAN); (28) Notes on Raw Hides and Skins from Picker Manufactures' Point of View (PICKERS LTD., AHMEDABAD); (29) Manual for Proper Flaying Curing and Carcass Utilisation (F. H. HOCK); (30) Investigation on the Preparation of Neatsfoot Oil (M. BANERJEE & P. K. SARKAR); (31) Bye-products from the Slaughter House and Their Utilisation (L. M. HIRA); (32) Products of Slaughter Houses and Their Uses (S. VENKATARAMAN); (33) Salt Curing of Fresh Slaughter House Hides (V. P. PANDIT & Y. V. LELE); (34) Economic Utilisation of Carcasses in India (N. HAQ); (35) Production of Hides and Skins (A. P. PALIT); (36) Flaying, its Present Position and Some Suggestions (F. D. WILSON); (37) Some Problems Relating to the Raw Hides and Suggested Remedies (S. VENKATARAMAN); and (38) Improving the Cattle Wealth Especially Goat and Sheep (A. B. NARAYAN).

Copies of the publication (Re 1 per copy) are available from the Director, Central Leather Research Institute, Adyar, Madras-20.

Research Committee Members

The Vice-President, CSIR, has been pleased to nominate the following as additional members of CSIR Committees. The Committee

is mentioned in each case against the name.

1. PROF. B. M. BELGAUMKAR (Indian Institute of Technology, Kharagpur) — *Electrical & Mechanical Engineering Research Committee*.

2. DR. D. S. KOTHARI (Scientific Adviser, Ministry of Defence) — *Advisory Committee on Rain & Cloud Physics Research Unit*.

3. SHRI C. BALASUBRAMANIAN (Agricultural Meteorologist, Coimbatore) — *Advisory Committee on Rain & Cloud Physics Research Unit*.

Personal

*The Vice-President, CSIR, has been pleased to permit DR. J. W. WHITAKER, to take up appointment as Director, *Indian School of Mines & Applied Geology*, Dhanbad, with effect from July 1, 1958 in addition to his assignment as Director, CMRS, Dhanbad. He has been relieved of his additional duties as Deputy Director-General, Scientific & Industrial Research, with effect from June 29, 1958.

*DR. L. K. DORAISWAMY has been appointed, on promotion, Senior Scientific Officer: Grade I, NCL, Poona, with effect from June 23, 1958.

*DR. J. C. SADANA has been appointed, on promotion, Senior Scientific Officer: Grade II, NCL, Poona, with effect from June 23, 1958.

*DR. A. K. DAS GUPTA has been appointed, on promotion, Senior Scientific Officer: Grade II, NCL, Poona, with effect from June 23, 1958.

*DR. T. R. INGLE has been appointed, on promotion, Junior Scientific Officer, NCL, Poona, with effect from June 23, 1958.

*SHRI P. K. GUPTE, Senior Scientific Officer, NML, Jamshedpur, has been nominated a member of the *Joint Sub-Committee for Concrete Reinforcement* of the Indian Standards Institution.

RESEARCH IN PROGRESS

National Laboratories

Central Food Technological Research Institute, Mysore

Protection of Coffee from Pests—Studies carried out at the Institute have shown that fumigation of coffee with methyl bromide at 1-2 lb./1000 cu. ft. dosage is adequate for its protection from pests. The bromide residues in coffee grains even on fumigation with higher dosage of 4 lb./1000 cu. ft. ranges from 16 to 39 p.p.m. This is much below the limit permitted (50 p.p.m.). The cup quality of coffee is unaffected by fumigation.

Central Drug Research Institute, Lucknow

Brain Phosphatase Activity—The pattern of changes in the brain phosphatase activity of rats given four different classes of drugs has been studied with the object of serving as a basis for correlating neuro-pharmacological actions. The drugs tested were: LSD-25 and adrenochrome (hallucinogens); reserpine and total Rauwolfia alkaloids (tranquilizers); seconal and barbital sodium (sedatives); and metrazol and strychnine (convulsants).

Sedatives caused an elevation of the enzyme activity. The total Rauwolfia alkaloids also caused an elevation whereas reserpine and strychnine caused a decrease in activity. The results thus show that drugs having similar pharmacological action did not necessarily have a similar effect on the brain phosphatase activity.

Central Electro-chemical Research Institute, Karaikudi

Corrosion Testing Farm—A corrosion testing farm has been started by the Institute at Mandapam Camp near Dhanushkodi Pier on the South-East coast of India. The site selected has a tropical-marine atmosphere (surrounded on all sides by the sea); it will be easy

to collect field data on the behaviour of metals and protective treatments all along the Indian coasts. The following problems of interest to the metal industry have been taken up for investigation at the Farm: (1) Rate and form of corrosion of metals and metallic coatings under tropical marine conditions; (2) performance of different methods of surface preparation of steel before painting; (3) comparative performance of coatings to prevent corrosion; and (4) performance under marine conditions of packages using different methods of packaging.

Central Road Research Institute, New Delhi

Bituminous Binders for Road Stones.—Experiments have been carried out on the cause of stripping of binder from road stones—a phenomenon which is detrimental to the successful performance of bituminous surfacings which constitute the bulk of the road pavements in India. Broad conclusions regarding the effect of shape, texture, quality and moisture of the road stones and effect of presence of dust as also the effect of the nature and quality of binder have been reached on the basis of these experiments. The permissible dust, moisture and flakiness of the road stones have been determined with a view to frame detailed specifications for the construction of bituminous roads. Road stone from various parts of the country are being collected and their behaviour is being studied.

Indian Institute for Biochemistry & Experimental Medicine, Calcutta

Diagnosis of Leprosy in Early Stages—The clinical diagnosis of leprosy infection with *Mycobacterium leprae* in early stage is not possible due to the absence of skin blemishes or lesions. Investigations carried out at the Institute in collaboration with the Premanand Leprosy Dispensary, have shown that serological tests may be used for detection of the silent phase of

leprosy. Of the 145 relatives of leprosy patients examined using the haemagglutination technique standardised at the Institute, 43 (30 per cent approx.) showed positive reaction. Of the 12 serologically positive cases followed up with x-ray examination, 10 were found free from tubercular infection. Two of the serologically positive cases, in whom clinical diagnosis for leprosy gave negative results, were found on closer examination to have macular patches characteristic of leprosy.

Sponsored Research

Nutritive Value of Heated Vanaspati—The influence of heat on the nutritive value of vanaspati (prepared from 95 per cent hydrogenated groundnut oil and 5 per cent sesame oil) has been studied using rats as experimental animals.

Vanaspati heated for 4 hr. and 8 hr. at 230-240°C. in an open iron pan, was less digestible than unheated vanaspati; the coefficients of digestibility being 88.5, 81.9 and 97.4 per cent respectively. The effect on growth promotion, feed efficiency, pregnancy and lactation was studied on rats maintained on 10 per cent level of dietary vanaspati heated at 230-240°C. for 8 hr. The feed efficiency of experimental animals slightly decreased, particularly during the later stages of growth, but there was no untoward effect in the appearance and the condition of liver and kidney at autopsy. All the rats became pregnant but the number of young born on the average was less. Lactation appeared to be unaffected. Study of the chemical effects of heating vanaspati to 205°C. and 230°C. for 16 hr. in an open iron pan showed that iodine value decreased with increased duration of heating. Peroxide formation and decomposition took place simultaneously and higher temperature favoured greater peroxide decomposition—B. C. GUHA & DIPTENDU GANGULY, Calcutta University, Calcutta.

OPTICAL GLASS PLANT

(Contd. from p. 1, col. 3)

Meanwhile the scientists at the Central Glass & Ceramic Research Institute conducted a thorough and systematic examination of raw materials, collected from different sources in the country, and established that suitable raw materials (excepting chemicals) for the production of optical glass are available in the country. In 1953, the Council of Scientific & Industrial Research arranged for the training of two senior officers of the Institute under Point Four Programme in the American Government plant attached to the National Bureau of Standards, where Dr. Atma Ram had previously worked.

In 1954, Dr. Atma Ram submitted to the Council a scheme for setting up, at the Central Glass & Ceramic Research Institute, a plant with an annual capacity of 5 tons. The scheme was approved by the Planning Commission in 1956.

After receiving the approval, the Institute concentrated its efforts on the fabrication of equipment, designing of furnaces, finalising of processes and training of about a dozen workers to handle operational work.

According to Prof. Kabir, the production of optical glass is the crowning achievement of the Institute. This success is remarkable as it has proved that indigenous raw materials could be utilized for the production of optical glass; the process of the National Bureau of Standards, Washington has been suitably adapted to Indian conditions; and all the equipment needed has been designed and fabricated at the Institute. Tests were conducted at the Technical Development Establishment, Dehra Dun, Delhi University and National Physical Laboratory, New Delhi, and it has been found that samples of optical glass produced by the Institute conform to the grade 'A' of the Draft Indian Standards Specifications.

PATENTS & PROCESSES

Applications Filed

64168: *Improvements in or relating to centrifugal pumps*—N. S. Govinda Rao, K. Seetharamiah & H. C. Radhakrishna, Indian Institute of Science, Bangalore.

64225: *Low melting resistant glass compositions*—Atma Ram, S. Kumar & P. Nath, CGCRI, Calcutta.

64226: *Preparation of predigested protein rich pasty products for fortifying and seasoning food preparations*—V. Subrahmanyam, B. S. Lulla & D. S. Johar, CFTRI, Mysore.

64352: *Preparation of Diosgenin*—V. Paul, K. L. Handa & I. C. Chopra RRL, Jammu-Tawi.

64353: *Improvements in the manufacture of furan compounds*—R. T. Thampy, K. Kathpalia & V. R. Nagarajan, Shri Ram Institute for Industrial Research, Delhi.

64354: *An improved process for the production of enzyme depilants and bates for leather manufacture*—S. Bose & S. C. Dhar, CLRI, Madras.

64366: *Developments in or relating to the production of oils and fats having materials for detecting their adulteration and preservation against spoilage*—B. S. Joshi, NCL, Poona.

Application Filed in U.S.A.

738122: *A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid*—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Application Filed in Switzerland

60068: *A process for the preparation of tridecane-1:13-dicarboxylic acid or its ester, suitable for the preparation of exaltone (cyclopentadecanone)*—B. B. Ghatgey, U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Process Ready for Exploitation

ETHYLENE DICHLORIDE

The National Research Development Corporation of India has issued a licence to M/s. P. Ramanlal & Co., Bombay for the commercial production of ethylene dichloride from ethyl alcohol in the Western Zone (comprising Bombay and Mysore states). The process of manufacture (Indian Pat. No. 51958) which involves the use of fluidised bed technique, has been worked out under a CSIR research scheme at the Shri Ram Institute for Industrial Research, Delhi. The process involves the use of simple equipment and yields a product of high purity.

Parties desirous of undertaking the production of ethylene dichloride according to the above process in the Eastern Zone (comprising Orissa, Bihar, Assam and West Bengal states and including Manipur and Tripura) and Southern Zone (comprising Andhra, Madras and Kerala states) are requested to write to the Secretary, National Research Development Corporation of India, Mandi House, New Delhi—1.

Central Leather Research Institute, Madras

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A Fortnightly News Bulletin

NEW DELHI-VOL. 8, NO. 14, JULY 26, 1958
SRAVANA 4, 1880

MEETINGS & SYMPOSIA

A meeting of the *Executive Council, National Chemical Laboratory*, Poona, will be held at Poona on Aug. 4, 1958 at 10.00 a.m. Shri Manubhai Shah, Union Minister for Industries, will preside.

A meeting of the *Biological Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Aug. 11, 1958 at 10.30 a.m. Prof. P. Maheshwari will preside.

Cottonseed and its By-products

A symposium on *Cottonseed and its By-products* will be held at the Regional Research Laboratory, Hyderabad, during Dec. 5-7, 1958. The following aspects of the subject will be discussed at the symposium:

- (1) Agricultural studies
- (2) Processing and storage of seed and oil
- (3) Refining of oil
- (4) Hydrogenation
- (5) Solvent extraction
- (6) By-products
- (7) Fundamental studies
- (8) Standards, statistics, marketing data, etc.

Scientists and technologists from U.S.A., U.S.S.R., U.K., China and the United Arab Republic are expected to take part in the symposium.

Those who wish to participate in the deliberations of the symposium by contributing papers may send their papers to the Director, Regional Research Laboratory, Hyderabad, so as to reach him by **Sept. 15, 1958**. Abstracts of papers

(not exceeding 200 words) may be sent in advance by **Aug. 15, 1958**. All papers will be preprinted and supplied to participants by Nov. 1, 1958.

Electrolytic Cells

A symposium on *Electrolytic Cells* will be held at the Central Electro-chemical Research Institute, Karaikudi, during the fourth week of December 1958. The symposium will be held under the following sections:

- (1) Industrial electrolytics
- (2) Electrometallurgical processes
- (3) Recent advances in fundamental aspects of electrolytic cells
- (4) Miscellaneous applications

Those desirous of contributing papers to the symposium may send their contributions (not exceeding 3,000 words) to Dr. H. V. K. Udupa, Assistant Director, CECRI, Karaikudi by **Nov. 15, 1958**. Abstracts of papers (not exceeding 100 words) may be sent in advance so as to reach him by **Sept. 15, 1958**.

Prof. Kabir Visits IIBEM

Prof. Humayun Kabir, Minister for Scientific Research & Cultural Affairs, visited the Indian Institute for Biochemistry & Experimental Medicine, Calcutta, on July 9, 1958. He was accompanied by Dr. M. M. Das, Deputy Minister for Scientific Research & Cultural Affairs. Dr. J. C. Ray, Director, received and took them round the various divisions of the Institute. Prof. Kabir evinced keen interest in the work of the Institute and expressed his appreciation of the good work.

Prof. Thacker's Visit to Canada

Prof. M. S. Thacker, Secretary, Ministry of Scientific Research & Cultural Affairs and Director-General, Scientific & Industrial Research, left for Canada on July 26, 1958 to attend the meeting of the Standing Committee of the *British Commonwealth Scientific Conference* to be held during Aug. 15-30, 1958. Prof. Thacker will be the guest of the National Research Council, Canada, and attend their meetings at Ottawa on Aug. 26 and 27. He will visit Universities of Montreal and McGill and a number of research and industrial organisations including Alberta Oilfields, Atomic Energy of Canada Ltd., Chalk River Laboratory, I.G.Y. Station and Rocket Firing Station, Fort Churchill.

On his way to Canada, Prof. Thacker will visit U.K. and East and West Germany. The *German Academy of Sciences of Berlin* has extended a special invitation to him.

Personal

*The President, CSIR, has been pleased to order that during the deputation abroad of Prof. M. S. Thacker from July 26, 1958 to the first week of September 1958, Dr. K. S. Krishnan, Director, NPL, New Delhi, will look after the duties of the Director-General, Scientific & Industrial Research.

*Shri B. C. Majumdar, Senior Scientific Officer, CRRI, New Delhi, left for U.S.A. on May 20, 1958 for higher training in *Highway Transportation* under T.C.M. Programme.

(Contd. on p. 4, col. 2)

B R I E F S

The Composition & Nutritive Value of Vanaspati, Vol. II

The results of investigations sponsored by the Vanaspati Research Advisory Committee of the Council of Scientific & Industrial Research since the publication in 1952 of *Investigations on the Composition and Nutritive Value of Vanaspati* have been published as volume two in the series.

The publication is divided into three parts. Part I deals with the studies on the stability of hydrogenated oils and of vitamin A in groundnut oils and on the physiological suitability of ethyl gallate as an antioxidant carried out by Shri B. R. Roy & Dr. B. C. Guha at the University College of Science & Technology, Calcutta. Part II is concerned with isolation and identification of iso-oleic acids by Dr. M. R. Subbaram at the Nutrition Research Laboratories, Coonoor, and Part III deals with processing and utilization of cottonseed oil for edible purposes with a note on the composition, properties and nutritive value of palm oil by Dr. Subrahmanyam and co-workers at the Central Food Technological Research Institute, Mysore.

The publication presents a consolidated account of the results and serves as a reference volume on the progress of vanaspati research since 1952. It may be of considerable interest to industry, scientists and others interested in the subject.

Copies of the publication (Price Rs. 5 per copy) are available from the Under Secretary, Publications Directorate, CSIR, 2-Old Mill Road, New Delhi-1.

Indian Scientific & Technical Personnel in Foreign Countries

The National Register Unit of the CSIR has made a study of the information contained in the 'Indians Abroad' section of the register of scientific and technical personnel and published, in May 1958, the results in the form of a booklet entitled, *Indian Scientific*

& Technical Personnel in Foreign Countries.

The report presents a general appraisal of the Indian scientists and technologists currently abroad, in regard to their countrywise and fieldwise distribution, status and occupation, sponsorship and assurance of employment, duration of stay, qualifications, pay expected on return to India, and choice of work. The appraisal is based on the particulars of 1001 persons registered up to April 1958.

The report will help manpower planning in advance, in respect of scientists and technologists trained abroad.

The second impression of the report (Price, 25 nP. per copy) is under print, and may be available shortly.

CBRI Shell Roof

The Central Building Research Institute, Roorkee arranged a demonstration of the casting of *Doubly Curved Shell Unit* (CSIR News, Vol. 7, No. 19, p. 3) for the Military Engineer Officers. The advantages of the shell units for the construction of roofs, such as lower cost of the material as compared to conventional joist and tile roofing, elimination of elaborate form-work and ability of the shell to withstand rough handling, were explained to them.

The Military authorities at Ambala have under consideration the construction of the shell units for use as staff quarters.

Research Committee Members

The following members have been nominated as representatives of their organisations, on the re-constituted Research Committees of CSIR (CSIR News, Vol. 8, No. 8, p. 3-4).

1. PROF. N. S. GOVINDA RAO, Indian Institute of Science, Bangalore (Institution of Engineers, India)—*Civil Engineering & Hydraulics Research Committee*.

2. BRIG. B. D. KAPUR, Research & Development Organisation, Ministry of Defence (Defence Science Organisation, New Delhi)—*Electrical & Mechanical Engineering Research Committee*.

3. THE DIRECTOR, Standardisation (Mechanical), Research, Design & Standardisation Organisation, Chittaranjan (Railway Board, New Delhi)—*Electrical & Mechanical Engineering Research Committee*.

4. SHRI MAHABIR PRASHAD, Irrigation Adviser, Ministry of Food & Agriculture (Ministry of Food & Agriculture, New Delhi)—*Public Health Engineering Research Committee*.

5. SHRI V. KANDASWAMY, Superintending Surveyor of Works, Central Zone (Ministry of Works, Housing & Supply)—*Public Health Engineering Research Committee*.

6. DR. B. N. SINGH, Air Headquarters, New Delhi (Electronics Development Panel, Defence Research & Development Organization, Ministry of Defence)—*Physical Research Committee*.

Research Papers

ANOMALOUS BEHAVIOUR OF POLYMER SOLUTIONS: Part II—VISCOSITY BEHAVIOUR OF RUBBER SOLUTIONS AT HIGH DILUTIONS—S. L. Kapur & S. Gundiah, NCL, Poona, *J. Colloid Sci.*, **13** (1958), 170.

POLYMER SOLUTIONS: Part III—VISCOSITY BEHAVIOUR OF DILUTE SOLUTIONS OF NATURAL RUBBER IN MIXED SOLVENTS—S. L. Kapur & S. Gundiah, NCL, Poona, *Makromol. Chem.*, **26** (1958), 119.

THE TRUE SURFACE AREA OF COAL—K. A. Kini, N. C. Ganguli & A. Lahiri, CFRI, Jealgora. *Proceedings International Congress of Surface Activity* (Butterworths Scientific Publications, London), 1957, 330-34.

USE OF HIGH ASH COALS AND WASHERY MIDDINGS FOR INDUSTRIAL STEAM RAISING AND POWER PLANTS—S. Gopala Rao, A. K. Bose, S. K. Das Gupta & A. Lahiri, CFRI, Jealgora. *J. Instn Engrs India*, **38** (1958), 883-91.

CLEMATIS NAPAULENSIS D. C. OF KIRTIKAR & BASU—S. L. Kapoor, NBG, Lucknow. *Indian J. Pharm.*, **20** (1958), 137-38.

UNDER-REAMED PILE FOUNDATIONS IN BLACK COTTON SOIL: DESIGN AND CONSTRUCTIONAL ASPECTS—Dinesh Mohan & Girraj Singh Jain, CBRI, Roorkee. *Indian Concr. J.*, **32** (1958), 203.

RESEARCH IN PROGRESS

National Laboratories

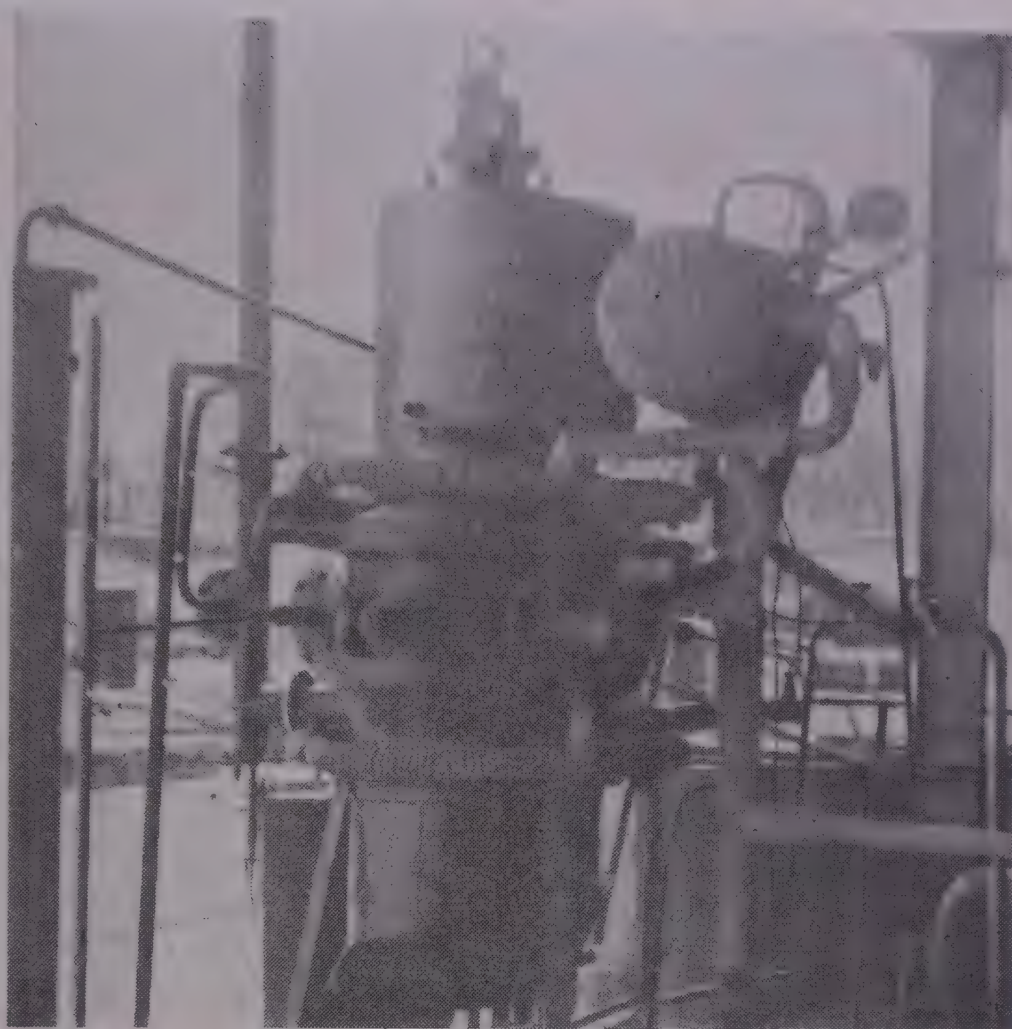
Central Fuel Research Institute,
Jealgora

Cross-draft Gas Producer—Producer gas plants used in automobiles operating on cross-draft principle, where air is introduced through a jet at the side of the fuel bed, have high capacity, flexibility and are inexpensive to construct and quick to start. Investigations on the application of this principle to industrial type producers of small capacity have resulted in the designing and development of a producer suitable for gasification of different types of coals (including lignite and bituminous coals).

The producer (diam., 20 in.) is made of mild steel sheet without any refractory lining. It is provided with two water-cooled tuyeres opposite each other through which air is introduced. A cast iron grate (diam., 11 in.) is located 12 in. below the tuyeres which can be moved up and down during operation. The grate can be manually rotated to discharge ash and clinker. The fuel bed descends as the gasification proceeds and the fire zone is at the centre of the producer and thick coal bed surrounding it acts as a lining and insulator. The producer is easily lighted and is ready in 15 minutes.

A variety of fuels, such as metallurgical coke, charcoal, lignite, sub-bituminous and bituminous coal have been tried in the producer. Experimental operation with lignite and Manki coal (Karanpura coalfield) was smooth as fusible ash dropped out of the reaction zone and the fire zone was clear; Samla coal (Raniganj coalfield) ash accumulated at the mouth of the tuyeres and frequent poking was necessary; and weakly coking Ghusick coals gave rise to 'arching' or 'hanging' in the fuel bed and frequent poking was necessary.

The maximum gasification rate achieved was 40-50 lb./hr. The gas composition with Manki coal at blast saturation temp. (122°F.)



CFRI, JEALGORA—A pilot cross-draft gas producer designed and fabricated at the Institute

was: CO_2 , 7.3; CO , 23.2; H_2 , 12.0; CH_4 , 1.0 and N_2 , 56.5 per cent. The efficiency was about 60-65 per cent (on cold gas basis).

A cross-draft producer, 3 ft. diam., with continuous gas generating capacity of 10,000 standard cubic ft. per hour has also been designed.

National Metallurgical Laboratory,
Jamshedpur

Steel Production by L.D. Process—Pilot plant studies are in progress for the production of steel by the Linz-Donawitz (L.D.) process (CSIR News, Vol. 7, No. 19, p. 3). The 0.1 ton basic lined converter was 'blown' a number of times with oxygen lancing under high pressure. An improved technique for the production of low-phosphorus, low-carbon steel from

Indian pig iron has been adopted by using a double slagging process with the addition of mill scale and iron ore as cooling agent. By this technique more than 90-99 per cent metalloids have been removed and a steel composition containing less than 0.02 per cent carbon, 0.01 per cent silicon, 0.02 per cent manganese, 0.04 per cent phosphorus, 0.22 per cent sulphur and 0.004 per cent nitrogen has been produced.

Central Building Research
Institute, Roorkee

Sound Absorbent Mortars—Exfoliated Mysore vermiculite has been utilized for making sound absorbent plasters and mortars. Measurements of the sound absorption coefficient of the mortars for different mix ratios at different

frequencies, using the apparatus designed and fabricated at the Institute (*CSIR News*, Vol. 8, No. 5, p. 1), have shown a peak at a sound frequency of about 2,000 c./sec. for mix ratios (4:1) of vermiculite and cement.

Sponsored Research

Toxic Action of Snake Venoms—

The role of enzymes in the toxic action of venoms has been studied to understand the primary biochemical changes in a normal cell responsible for producing toxic symptoms produced by snake venoms.

Earlier work had shown that cobra venom lecithinase produces a pronounced inhibition of several mitochondrial enzymes connected with the oxidative metabolism of the brain tissue. The present investigations have shown that cobra venom lecithinase preparations considerably inhibit *in vitro* the oxidative phosphorylating enzyme system of brain and liver tissue and also isolated brain mitochondria. Since oxidative phosphorylation is the main pathway for adenosine triphosphate (ATP) synthesis, its inhibition would affect the energy metabolism considerably. The *in vitro* findings have been correlated by *in vivo* experiments where brain tissue of animals injected with cobra venom was used for studying its metabolism. These experiments showed that cobra venom rapidly inactivates the enzymes needed for energy metabolism in the central nervous system in the intact animal. The penetration of lecithinase A of cobra venom in the tissues of the central nervous system has also been observed. The observed disturbances in energy metabolism are possibly produced by the direct action of phospholipase on tissue phospholipids—B. M. BRAGANCA & I. ARAVINDAKSHAN, Indian Cancer Research Centre, Bombay

PERSONAL

(Contd. from p. 1, col. 3)

*SHRI N. MOHAN RAO, Junior Scientific Officer, CRRI, New Delhi, left for U.S.A. on July 1, 1958 for higher training in *Pavements and Highways* under T.C.M. Programme.

*PROF. SANTI R. PALIT, Professor of Physical Chemistry, Indian Association for the Cultivation of Science, Calcutta, and Investigator-in-charge of CSIR scheme, left for U.K. on July 17, 1958 to attend the *International High Polymer Conference* at Nottingham (July 21-24, 1958) organised by the Macromolecular Commission of the International Union of Pure and Applied Chemistry. After attending the Conference, Prof. Palit will be proceeding to U.S.A. on a short lecture tour.

*DR. J. L. SARIN, Industrial Liaison Officer, CSIR, has been nominated an alternate member to Dr. J. W. Whitaker, Director, CMRS, Dhanbad, on the *National Productivity Council* of the *Union Ministry of Commerce and Industry*.

*DR. I. C. CHOPRA, Officer-in-charge, RRL, Jammu-Tawi, has been nominated a member of the Working Group of Scientists constituted by the Indian Council of Medical Research to initiate research and recommend *Methods of Treatment of Narcotic Addicts*.

*SHRI H. V. BHASKAR RAO, Senior Scientific Officer, NML, Jamshedpur, has been nominated member and convener of the *Graphite Crucibles Sub-Committee* of the ISI.

*DR. T. BANERJEE, Deputy Director, NML, Jamshedpur, has been awarded the *Dr. K. G. Naik Gold Medal* for 1958 by the University of Baroda for the best contribution made to published research, which has been found or is most likely to find application in developing Indian industries, for the last five years.

*DR. BHUPATI KUMAR BANERJEE, Junior Scientific Officer, CFRI, Jealgora, has been awarded the D.Sc. degree by the University of Calcutta for his thesis, *Studies on Glass*. The thesis relates to the structural studies on glass in relation to its colour, the oriented nature of the molecules in glass fibres, catalytic inversion of silica and isostructural silica and crystal structure of some borates.

*SHRI T. S. RANGANATHAN, Senior Scientific Assistant, CLRI, Madras, who had been to U.K. (under Colombo Plan), has been awarded the D.Sc. degree by the Leeds University for his thesis, *Zirconium Tanned Leather and its Retanning with Vegetable Tannin Material*. He resumed duty with effect from April 22, 1958 after completion of his two years' training at the Leather Industries Department of the Leeds University.

CSIR PUBLICATION

INVESTIGATIONS ON THE COMPOSITION AND NUTRITIVE VALUE OF VANASPATI—Volume Two

A collected account of the researches sponsored by the CSIR Vanaspati Research Advisory Committee, 1952-57

Royal 8 Vo, Pages: IV + 79

Price: Rs. 5 per copy (Postage extra)

For copies write to:

The Under Secretary, Publications Directorate, CSIR,
Old Mill Road, New Delhi-1



A Fortnightly News Bulletin

NEW DELHI-VOL. 8, NO. 15, AUG. 9, 1958
SRAVANA 18, 1880

MEETINGS & SYMPOSIA

A meeting of the *Executive Council, Central Food Technological Research Institute, Mysore*, will be held at Mysore on Aug. 23, 1958 at 5.0 p.m. Shri B. D. Jatti, Chief Minister, Mysore, will preside.

A meeting of the *Executive Council, Central Electro-chemical Research Institute, Karaikudi*, will be held at the Institute on Aug. 30, 1958 at 3.0 p.m. Shri C. Subramaniam, Minister for Finance and Education, Government of Madras, will preside.

A meeting of the *Aeronautical Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Aug. 23, 1958 at 10.0 a.m. Dr. D. S. Kothari will preside.

A meeting of the *Public Health Engineering Research Committee* will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Sept. 1, 1958 at 10.30 a.m. Shri N. V. Modak will preside.

Chemotherapy in Bacterial and Viral Infections

A symposium on *Chemotherapy in Bacterial and Viral Infections* will be held at the Central Drug Research Institute, Lucknow, in October 1958. The following aspects of the subject will be discussed at the symposium:

BACTERIAL INFECTIONS

- (1) Chemical constitution and biological activity in bacterial infections
- (2) Newer trends in chemotherapy of tuberculosis and leprosy
- (3) Chemotherapy and emergence of resistant forms of bacteria

- (4) Synergism and antagonism
- (5) Chemotherapy and antibiotics

VIRAL INFECTIONS

- (1) Methods for testing compounds for virus inhibition
- (2) Structure and multiplication of viruses
- (3) Effect of chemicals on virus growth

Those desirous of contributing papers to the symposium may send their contributions (in duplicate) to Dr. D. L. Shrivastava, Deputy Director, CDRI, Lucknow, by **Sept. 15, 1958**. Abstracts of papers (in duplicate) may be sent in advance so as to reach him by **Aug. 30, 1958**.

Personal

*DR. B. C. SUBHARAO has been appointed Senior Scientific Officer: Grade I, NCL, Poona, with effect from July 14, 1958.

*SHRI V. ARAVAMUTHAN has been appointed, on promotion, Senior Scientific Officer: Grade I, CECRI, Karaikudi, with effect from July 21, 1958.

*SHRI S. GHOSH has been appointed, on promotion, Senior Scientific Officer, CECRI, Karaikudi, with effect from July 21, 1958.

*DR. A. K. N. REDDY has been appointed Senior Scientific Officer, CECRI, Karaikudi, with effect from July 30, 1958.

*DR. A. VISWANATHAN, Junior Scientific Officer, NPL, has been appointed Senior Scientific Officer, CECRI, Karaikudi, with effect from Aug. 2, 1958.

*SHRI D. S. BENDAB has been appointed Junior Scientific Officer,

NCL, Poona, with effect from July 14, 1958.

*DR. J. W. WHITAKER, Director, Indian School of Mines & Applied Geology and Director, CMRS, Dhanbad, has been nominated a member of the *Executive Council, CFRI, Jealgora*.

*SHRI T. V. RAMAMURTI, Senior Scientific Officer, NPL, New Delhi, has been nominated a member of the Sub-Committee formed to survey and recommend the means for indigenous manufacture of Radio Components under the *Development Council for Light Electrical Industries*, Union Ministry of Commerce & Industries.

*The following six officers of the CSIR have been nominated members of different Committees/Panels of the Indian Standards Institution:

DR. K. N. MATHUR, Deputy Director, NPL, New Delhi—*Engineering Metrology Sectional Committee*.

SHRI PREM PRAKASH, Asstt. Director, NPL, New Delhi—*Panel for Primary, Secondary and Working Standards and Machine Tools and Small Tools Sectional Committee*.

SHRI R. K. TANDON, Senior Scientific Officer, NPL, New Delhi—*Domestic Appliances Sub-Committee*.

DR. S. K. BARAT, Senior Scientific Officer, CLRI, Madras—*Methods of Sampling and Test and Terminology Sub-Committees*.

SHRI P. K. GUPTA, Senior Scientific Officer, NML, Jamshedpur—*Automotive Vehicles Sectional Committee*.

SHRI K. S. SHARMA, Junior Scientific Officer, NPL, New Delhi—*Electric Lamps Sub-Committee*

B R I E F S

Antibiotics—A symposium

The proceedings of the symposium on Antibiotics—*Their Production, Utilization and Mode of Action*, held at the Hindustan Antibiotics (Private) Ltd., Pimpri, during March 27-30, 1956 have been published. The symposium was organised by the Biochemical Research Committee in collaboration with the Pharmaceuticals & Drugs Research Committee.

Sixty-five papers presented and discussed at the symposium are arranged in the publication under the following heads: (i) *Screening of Soils and Plants for Antibiotics*; (ii) *Production*; (iii) *Assay*; (iv) *By-Products*; (v) *Chemistry and Biosynthesis*; and (vi) *Applications*. The papers included are: Distribution of Higher Myxobacteria in Indian Soils (B. N. SINGH, S. MATHEW & M. SREENIVASAYA); Screening of Indian Soils for Antibiotic- and Vitamin B₁₂-producing Micro-organisms (K. SHETE (Mrs.) & V. C. VORA); Screening of Soils for the Isolation of Antagonistic Organisms by the Soil Plaque Technique (S. K. MAJUMDER & NIRAD K. SEN); Isolation of Antibiotic-producing Organisms from Soil Using Dye-stuffs (P. N. NANDI & M. PURKAYASTHA (Miss)); *Volutellospora*: A New Genus of Soil Fungus with Antifungal Activity (M. J. THIRUMALACHAR); Antifungal Substance from Streptomycete (M. J. THIRUMALACHAR & D. GHOSH); A New Antibiotic from *Streptomyces* Species (V. C. VORA & K. SHETE (Mrs.)); Antibiotics from the Genus *Fusarium* (M. O. TIRUNARAYANAN & M. SIRSI); Oxysporin: A New Tuberculostatic Antibiotic from *Fusarium* Species—Cultural Studies on its Production (M. O. TIRUNARAYANAN & M. SIRSI); Screening of Some Reputed Indigenous Plants for their Anti-tubercular Activity (I. C. CHOPRA, B. N. KHAJURIA & C. L. CHOPRA); Guttiferin: A New Plant Antibiotic (D. RAJAGOPAL RAO, K. V. NAGESWARA RAO & P. L. NARASIMHA RAO); Antibiotic Studies on Indian Soil Micro-organisms: Parts I & II (F. M. POONAWALLA, F. FERNANDES

& S. S. BHATNAGAR); Some Attempts to Replace Imported Raw Materials in Penicillin Fermentation (M. J. THIRUMALACHAR & K. S. GOPALAKRISHNAN); A Study of Supplements for Fortification of Worts with Special Reference to Production of Antibiotics (M. SREENIVASAYA); Studies on the Supplemental Value of Indian Pulse Extracts in Penicillin Production (T. N. RAMACHANDRA RAO); Nutritional Factors for Streptomycin Formation (R. RAGHUNANDANA RAO); Studies on Some Physical Properties of Fermentation Broth in Penicillin Manufacture (S. K. KULKARNI & R. S. PHADKE); Production of Penicillin Using Oilcake Medium (H. GHOSH & A. GUHA THAKURTA); Oilcakes for the Manufacture of Penicillin (R. KAUSHAL & P. D. KULKARNI); Utilization of Tamarind Seeds in Penicillin Production (S. G. BHAT, J. G. KANE & A. SREENIVASAN); Factors Influencing Pellet Formation in Shake Flask Fermentation (M. J. THIRUMALACHAR & K. S. GOPALAKRISHNAN); Factors Influencing Pellet Formation in Large Fermentors During Penicillin Production (K. S. GOPALAKRISHNAN & M. J. THIRUMALACHAR); Production of an Antibiotic Substance from a Strain of *Streptomyces* Sp., Ac₃-203 (G. P. SEN & P. N. NANDI); Production of Mutants in *Penicillium notatum* Induced by Ultra-violet Irradiation (P. N. NANDI & A. K. MISHRA); Improvements in Technique for Selecting *Penicillium chrysogenum* Strains for Increased Penicillin Yield (M. J. THIRUMALACHAR); Problem of Foam Control in Aerobic Fermentation with Special Reference to Penicillin Production (D. GHOSH); Chemical Composition of Mycelium of *Penicillium chrysogenum* (V. N. DESHPANDE, K. GANAPATHI, S. P. DAMLE, V. L. VINZE, H. G. VARTAK, N. S. PHADKE & D. GHOSH); Assay of Penicillin with Special Reference to Fermented Broth (N. NARASIMHACHARI, P. D. KULKARNI & I. NALINI (Miss)); Biological Assay of Antibiotics: Part I & Part II (R. SADASIVAN & J. N. TAYAL); Disc Method for Testing Sensitivity of Antibiotics (S. L. KALRA); Studies on Soluble Enzymes in Penicillin Fermentation Broth: Parts I & II (S. P. DAMLE, KARTAR SINGH

& D. GHOSH); Production of Enzymes as By-products from Soil Actinomycetes (K. D. PANT, K. SHETE (Mrs.) & C. R. KRISHNA MURTI); Mycelial Hydrolysate as Medium for Growth of Micro-organisms (P. D. KULKARNI & S. VISHVANATHAN); Biosynthesis of Penicillin (K. GANAPATHI); Synthesis of Symmetrically Disubstituted Ethylene Diamine Dipenicillin G Salts (G. N. VYAS & S. G. DHOPATE); Attempts at Biosynthesis of Citrinin Analogues (D. V. TAMHANE, A. SREENIVASAN & K. VENKATARAMAN); Fermentation Products of *Penicillium herquei*: A Preliminary Study (K. S. GOPALAKRISHNAN & N. NARASIMHACHARI); Preliminary Observations on the Mode of Action of Morellin (D. V. KRISHNA MURTHY & P. L. NARASIMHA RAO); Antibiotics in Animal Nutrition: Mechanism of Growth-promoting Action of Aureomycin (B. S. NARASINGA RAO & V. N. PATWARDHAN); Interference with Amino Acid Metabolism by Citrinin (D. V. TAMHANE & A. SREENIVASAN); Influence of Some Antibiotics on the Biosynthesis of Ascorbic Acid (K. SIVARAMA SASTRY & P. S. SARMA); Effect of Penicillin and Aureomycin on Enzyme Production by *Vibrio cholerae* (S. N. IYER, K. L. ARORA & C. R. KRISHNA MURTI); Action of Antibiotics on Enzyme Systems (C. R. KRISHNA MURTI & D. L. SHRIVASTAVA); Tetracycline Antibiotics and Nucleotide Metabolism in Micro-organisms (T. BALAKRISHNA RAO, D. V. TAMHANE, D. V. REGE & A. SREENIVASAN); Terramycin and Growth: Parts I & II (T. BALAKRISHNA RAO, D. V. TAMHANE & A. SREENIVASAN); Effect of Aureomycin and Vitamin B₁₂ on the Utilization of Proteins from Poor Rice Diet in Rats (S. M. PATEL, S. SESHADRI & M. V. RADHAKRISHNA RAO); Effect of Antibiotics on Vitamin A Metabolism, Growth, Carcass Composition and Haematological Values in Rats (S. R. WAGLE, S. M. PATEL & M. V. RADHAKRISHNA RAO); Some Observations on the Effect of Asafoetida Oil on Intestinal Microflora (V. SREENIVASAMURTHY & L. V. L. SASTRY); Metabolic Changes in Citrinin-resistant *Bacillus subtilis* (D. V. TAMHANE & A. SREENIVASAN)

(Contd. on p. 4, col. 1)

RESEARCH IN PROGRESS

National Laboratories

Central Glass & Ceramic Research Institute, Calcutta

Mica Grading Apparatus—Ruby muscovite mica is required for use in mica capacitors and condensers on account of its low dielectric loss. This is selected at present from mined mica on the basis of visual examination without any reference to its electrical properties and hence a large quantity of mica gets rejected though there is no definite evidence for its poor-electrical property.

The Central Glass & Ceramic Research Institute has developed an instrument for testing and evaluating the electrical qualities of mica in the form of blocks and splittings. Use of this equipment helps in the rapid classification of sheet mica on the basis of power factor and ensures suitable use of different grades of mica.

The instrument is operated by a self contained battery at a fixed frequency of 1 mc./sec., using a square law detector in a high power tuning circuit having mica test pieces as dielectric medium. It has an arrangement to indicate the power loss or Q value by a single reading of a voltmeter. The important feature of the instrument is a special grid type electrode which enables easy mounting of test pieces of any size and thickness and ensures high sensitivity and better accuracy for inter-laminar impurities.

The instrument is portable, simple to operate, fool-proof and suitable for commercial scale testing of mica.

Central Electro-chemical Research Institute, Karaikudi

Electrolysis of Sodium Sulphate—A vertical type of mercury cell has been devised for the electrolysis of sodium sulphate on a laboratory scale. A vertical falling film of mercury has been used as the cathode in the cell. Sodium sulphate obtained as a by-product

from rayon factories has been used for electrolysis. The cell has a current efficiency of 90-95 per cent and produces caustic soda (50 per cent) and sulphuric acid (15 per cent) mixed with an equal quantity of sodium sulphate. The cell has the following advantages over the horizontal mercury cell developed in the Institute previously (CSIR News, Vol. 6 No. 4, p. 3): (1) requirement of mercury is considerably less; (2) space requirement of cell is 60 per cent less; and (3) power consumption is reduced by about 15 per cent.

Central Road Research Institute, New Delhi

Alkali-Aggregate Reaction in Concrete—Alkalis in portland cement react with certain siliceous constituents of some aggregates with consequent expansion and cracking accompanied by decline in strength, elasticity and durability of concrete. Hence, in U.S.A., several agencies have specified the use of only low alkali (less than 0.6 per cent) cement with reactive aggregates.

Investigations carried out at the Institute have shown that even such low alkali cements show alkali-aggregate reaction with aggregates having high percentage of reactive siliceous constituents. The complex process of reaction is being investigated.

It has been found that replacement of a part of cement with *surkhi* counteracts the adverse effect of alkali-aggregate reaction in concrete.

Indian Institute for Biochemistry & Experimental Medicine, Calcutta

Studies on *Leishmania donovani*—Resting cells of *L. donovani* suspended in phosphate buffer (concentration, 0.1 M; pH, 7.2) rapidly assimilate carbon dioxide in an atmosphere of nitrogen and carbon dioxide (95:5). The assimilation is independent of the addition of glucose (which is rapidly metabolised in aerobic and anaerobic conditions) showing thereby that some

vital process is involved in the endogenous metabolism of the organism. Studies to elucidate the nature of the product of carbon dioxide assimilation are in progress.

The polysaccharide fraction of *L. donovani* has been isolated in pure form and its nature elucidated. The purified fraction on hydrolysis yields glucose and a pentose sugar—A. N. CHATTERJEE.

Sponsored Research

SCHEME TERMINATED

Metabolic Degradation of Pamaquin—*In vivo* metabolic studies on pamaquin in *Macaca mulatta mulatta* (rhesus monkey) were carried out to understand the mechanism of break-down of the drug.

Pamaquin citrate was administered to monkeys orally and intravenously and their urine examined. The chemical and ultra-violet absorption spectral studies of the urine showed that pamaquin had been extensively degraded in the system through oxidation, into simpler soluble fragments none of which had any antimalarial activity against *Plasmodium gallinaceum* in chicks. Estimation of nicotinic acid in urine was carried out both prior and subsequent to intravenous drug administration. It was observed that during the first 24 hr. after the drug administration there was no change in the nicotinic acid content but afterwards the increase persisted even up to 44 days. The level of nicotinic acid in the blood was unaffected. The sugar, albumen and bile pigments in urine both before and after administration of the drug did not indicate any abnormality.

The results of the study show that pamaquin is oxidised in the system *via* quinoline-quinone into nicotinic acid and its simpler soluble fragments—JASWANT SINGH & GURJIT SINGH, Malaria Institute of India, Delhi (January 1955 to February 1958).

ANTIBIOTICS SYMPOSIUM PROCEEDINGS

(Contd. from p. 2, col. 3)

SAN); Studies on Antifungal Antibiotics: Metabolic Changes during the Production of an Antibiotic by *Bacillus subtilis* (S. K. MAJUMDAR & S. K. BOSE); Antibiotic Action and Bacterial Resistance (M. S. KANVINDE); Recent Trends in Applications of Antibiotics (J. F. BRITTO); Antibiotics in Raising Insects of Economic Importance with Special Reference to the Silkworm *Bombyx mori* Linn. (M. SREENIVASAYA); Antibiotics: Their Therapeutic Uses and Hazards (B. B. YODH); Personal Experiences with Tetracycline and Carbomycin: Parts I to IV (K. S. SANJIVI); Oxy-*sporin* in Experimental Tuberculosis and Preliminary Observations on Toxicity and Pharmacodynamic Action of Oxy-*sporin* (M. O. TIRUNARAYAN & M. SIRSI); Protection of Chick Embryos against Vaccinia Virus by a Degradation Product of Pterygosperrin (V. N. KRISHNAMURTHY); Antibiotics in the Treatment of Veneral Diseases and Treponematoses (R. V. RAJAM).

Copies of the publication (Price Rs. 15 per copy) are available from the Under Secretary, Publications Directorate, CSIR, Old Mill Road, New Delhi-1.

Scheme Terminated

The research scheme, *Action of Leather on photographic emulsions* by Prof. V. P. N. Nambiyar, Pachaiyappa's College, Madras has been terminated with effect from July 31, 1958.

We regret to announce the death of PROF. K. V. GIRI, Head of the Department of Biochemistry, Indian Institute of Science, Bangalore, on July 17, 1958 at Madras. Prof. Giri was closely associated with the CSIR. He was a member of the Scientific Advisory Committee, CFTRI, Mysore, a member of the Biochemical Research Committee, and Investigator-in-charge of some sponsored research schemes.

PATENTS & PROCESSES

Applications Filed

64457: A process for the manufacture of malted milk powder—M. R. Chandrasekhara, M. N. Rao, M. Swaminathan, N. L. Lahiry, D. S. Bhatia & V. Subrahmanyam, CFTRI, Mysore.

64458: A process for the manufacture of malted milk beverage flavoured with cocoa—M. R. Chandrasekhara, M. N. Rao, M. Swaminathan, N. L. Lahiry, D. S. Bhatia & V. Subrahmanyam, CFTRI, Mysore.

Application Filed in Holland

227434: A process for the preparation of tridecane-1:13-dicarboxylic acid or its ester, suitable for the preparation of exaltone (cyclopentadecanone)—B. B. Ghatgey, U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Application Filed in Germany

C 16 822 IVb/120: A process for the preparation of tridecane-1:13-dicarboxylic acid or its ester, suitable for the preparation of exaltone (cyclopentadecanone)—B. B. Ghatgey, U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

Applications Accepted

58382: A container closure device—C. R. Gupta, NPL, New Delhi.

59266: A method for the isolation of psoralen-isopsoralen mixture from the seeds of *Psoralea corylifolia* (babchi)—S. Bhattacharji & M. L. Dhar, CDRI, Lucknow.

61645: A new process for the manufacture of precast doubly-curved shell elements for roofs, floors and panel walls—G. S. Ramaswamy & S. M. K. Chetty, CBRI, Roorkee.

Application Accepted in Germany

C 10 359 IVb/121: Improvements in or relating to ion-exchangers from coal, peat, lignite or the like—R. P. Puri & P. K. Banerjee, CFRI, Jealgora.

Process Ready for Exploitation

VITAMIN C

Vitamin C (ascorbic acid) has been synthesised at the National Chemical Laboratory, Poona, by a four-stage process starting from d-sorbitol. The process (Indian Pat. No. 39442) is based on the original Reichstein method which has been modified to improve the conversion yields. The product conforms to the specifications of Indian, British and U.S. Pharmacopoeias.

Pilot plant investigations on the production of d-sorbitol (which is at present imported) starting from glucose, which is indigenously available, are in progress.

The annual requirements of vitamin C in India are estimated at 75,000 lb.

Parties interested in undertaking the development of the process may write to the Secretary, National Research Development Corporation of India, Mandi House, New Delhi.

CSIR PUBLICATION

ANTIBIOTICS—THEIR PRODUCTION, UTILIZATION AND MODE OF ACTION

Proceedings of the Symposium held in 1956

Royal 8 Vo, Pages: XXV + 292

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The Under Secretary, Publications Directorate, CSIR,
Old Mill Road, New Delhi-1



A Fortnightly News Bulletin

NEW DELHI-VOL. 8, NO. 16, AUG. 23, 1958

BHADRA 1, 1880 **DUPLICATE**

National Recognition for Eminent Scientists



Prof. S. N. Bose

According to an announcement by the Government of India on Independence Day, Dr. K. S. Krishnan, F.R.S., Director, National Physical Laboratory, New Delhi, and Prof. S. N. Bose, F.R.S., Vice-Chancellor, Visva Bharati University, Santiniketan, have been appointed National Professors for five years. Both are members of the Governing Body, Council of Scientific & Industrial Research.



Dr. K. S. Krishnan

Picking Band Leathers

CLRI PRACTICAL DEMONSTRATION

Manufacture of Picking Band Leathers by combination tanning method of sulphur-oil-vegetable tannin is the fifth process selected for demonstration during the year to representatives of the tanning industry at the Central Leather Research Institute, Madras. The present method incorporates improvements achieved as a result of additional research carried out at the Institute since the demonstration of two similar processes during April-May, 1957. The demonstration which commenced on Aug. 19, is expected to continue till Sept. 29, 1958.

Personal

* DR. V. NARASIMHAN has been appointed, on promotion, Senior Scientific Officer: Grade II, CBRI, Roorkee, with effect from July 7, 1958.

* SHRI P. L. CHATURVEDI has been appointed Assistant Editor (Zoology), Publications Directorate, CSIR, with effect from July 14, 1958.

* SHRI S. N. MUSHRAN has been appointed Mechanical Engineer, CBRI, Roorkee, with effect from July 8, 1958.

* SHRI A. C. BANERJEE has been appointed, on promotion, Junior Scientific Officer, CBRI, Roorkee, with effect from Aug. 4, 1958.

* SHRI C. A. TANEJA has been appointed, on promotion, Junior Scientific Officer, CBRI, Roorkee, with effect from Aug. 4, 1958.

* SHRI G. W. KAPSE has been appointed, on promotion, Junior Scientific Officer, CBRI, Roorkee, with effect from Aug. 4, 1958.

* SHRI S. P. KRISHNASWAMY has been appointed, on promotion, Junior Scientific Officer, CGCRI, Calcutta, with effect from June 19, 1958.

* SHRI S. K. MUKHERJEE has been appointed, on promotion, Junior Scientific Officer, CGCRI, Calcutta, with effect from June 19, 1958.

* SHRI B. V. KESHAVAN, Junior Scientific Officer, CEERI, Pilani, relinquished charge of his post with effect from July 12, 1958.

* DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore, has been nominated a member of the Rice Committee of the Indian Council of Agricultural Research.

* DR. V. SUBRAHMANYAN has been nominated a member of the Sub-Committee appointed by the Indian Council of Agricultural Research to examine the working of the Garden Colony Scheme in Panjab.

* DR. ATMA RAM, Director, CGCRI, Calcutta, has been nominated member of the Committee, appointed by the Union Ministry of Scientific Research & Cultural Affairs, to consider *Pattern of Courses in Silicate Technology* under All India Board of Technical Studies in Chemical Engineering & Chemical Technology.

* DR. H. A. B. PARPIA, Asst. Director, CFTRI, Mysore, has been nominated a member of the Development Council for Food Processing Industries, Union Ministry of Commerce & Industry.

* DR. GIRDHARI LAL, Asst. Director, CFTRI, Mysore, has been nominated member of the Central Fruit Products Advisory Committee, Union Ministry of Food & Agriculture.

* DR. H. V. K. UDUPA, Asst. Director, CECRI, Karaikudi, has been nominated a member of the Study Group formed by the Electronics Development Panel (Union Ministry of Defence) to examine the Battery Development Programme in the Country.

* MAJ. N. V. R. IYENGAR, Senior Scientific Officer, CFTRI, Mysore, has been nominated a member of the Gur and Khandsari Sub-Committee of the Indian Central Sugarcane Committee, Union Ministry of Food & Agriculture.

(Contd. on p. 2, col. 3)

BRIEFS

I. G. Y. National Committee

The National Committee of the International Geophysical Year (I.G.Y.) has issued further newsletters. Nos. 1—6 were noticed in these columns earlier (*CSIR News*, Vol. 8, Nos. 6, 7 & 9).

News-letter No. 7 (May 15, 1958) gives a brief account of the cosmic radio-noise absorption studies carried out by the Physical Research Laboratory, Ahmedabad, Todapur Receiving Centre, Delhi, and Seismograph Stations operating in India. News-letter No. 8 (June 2, 1958) reports in brief the results of night air-glow experiments carried out at Mt. Abu and ionospheric studies at Ahmedabad. The progress of ionospheric studies (by Dr. B. Ramachandra Rao, Waltair) and atmospheric noise observation (by Dr. M. W. Chip-lonkar, Poona) is recorded in News-letter No. 9 (June 4, 1958). News-letter No. 10 (June 5, 1958) reports the results obtained by (1) the Komsomolskaya Station of the U.S.S.R. on earth's magnetic activity and (2) the scientist aboard the oceanographic vessel "Brown Bear" of the University of Washington on study of deep waters in the North-East Pacific. The data collected by the U.S.S.R. satellites 1957 α and 1957 β and the U.S. satellite 1958 α form the subject matter of News-letter No. 11 (June 20, 1958). News-letter No. 12 (July 28, 1958) announces the publication of I.G.Y. Satellite Report Series by the I.G.Y. World Data Centre A and gives a summary of the report issued by the U.S.S.R. National Committee on the biological experiments carried out on the dog 'Laika' during the launching of Sputnik II.

Indian National Committee for U. R. S. I.

Microfilm and paperphoto copies of papers presented at the XII General Assembly of the International Scientific Radio Union (U.R.S.I.), held in Boulder, Colorado, U.S.A., during 1957, are available from the Indian National Scientific Documentation Centre,

NPL, New Delhi, at the following rates: *Microfilm*: Rs. 2 for first strip (about 10 pages), additional strip, Re. 1 each; *Paperphoto*: Rs. 2 for first two pages and each subsequent two pages, Re. 1.

The list of papers arranged commission-wise is available free of cost from the Indian National Committee for U.R.S.I., NPL, Hillside Road, New Delhi-12.

Training in Microwaves

The Radio Research Committee of the CSIR has selected the following candidates for practical training in *Microwaves* at No. 509-Army Workshops, E.M.E., Agra. The course which is of two months' duration commenced on Aug. 1, 1958.

1. PROF. BISWANATH CHATTERJEE—Indian Institute of Technology, Kharagpur.

2. DR. D. R. KHOLI—University of Roorkee, Roorkee.

3. SHRI G. RAVINDRA BABU—Birla College of Engineering, Pilani.

4. DR. PREMA SWARUP—Andhra University, Waltair.

5. PROF. S. P. S. THAKUR—Cotton College, Gauhati.

6. SHRI C. V. MERANI—All India Radio, New Delhi.

New Members of CSIR Committees

The following have been nominated members of the CSIR Committees noted against their names:

1. SHRI A. C. RAMCHANDANI, Chief Engineer, All India Radio, New Delhi—Radio Research Committee.

2. AIR COMDR. M. S. CHATURVEDI, Air Officer-in-charge (Maintenance), Air Headquarters, New Delhi—Aeronautical Research Committee vice Air Comdr. S. N. Goyal.

3. SHRI SYED ASHFAQUE HUSAIN, Development Commissioner, Small Scale Industries, Union Ministry of Commerce & Industry—Joint Standing Committee for Scientific Research and Industry.

4. DR. M. G. K. MENON, Associate Professor, Tata Institute of

Fundamental Research, Bombay, as representative of the Department of Atomic Energy, Bombay—Physical Research Committee.

PERSONAL

(Contd. from 1, col. 3)

*SHRI P. HARIHARAN, Senior Scientific Officer, NPL, New Delhi, has been awarded the Ph.D. degree by the Kerala University for his thesis, *Photographic Resolving Power*.

*SHRI S. K. PAVANARAM, Research Assistant, CSIR scheme; Chemical examination of Indian commercial timbers (Andhra University, Waltair) has been awarded the D.Sc. degree by the Andhra University for his thesis, *Synthesis of Furano Benzopyrones and Chemical Examination of Indian Heartwoods*.

*SHRI KRISHNA SWARUP, Research Assistant, CSIR scheme; Morphology, breeding habits and seasonal variations in the gonads of certain teleostei (Allahabad University, Allahabad) has been awarded the D.Phil. degree by the Allahabad University for his thesis, *Contributions to the study of the Bionomics, Biometrics, Morphology, Breeding Habits and Seasonal Gonadal Changes in Hilsa ilisha found at Allahabad*.

*SHRI G. P. SRIVASTAVA, Research Assistant, CSIR scheme; Absorption of microwaves in the 3 cm. region (Department of Applied Physics, University of Allahabad) has been awarded the D.Phil. degree by the University of Allahabad for his thesis, *Dispersion and Absorption of Microwaves in Organic Molecules*.

* * *

*DR. N. K. PATWARDHAN, Asst. Director, CBRI, Roorkee, has been elected a Fellow of the Royal Institute of Chemistry.

*SHRI SURYANARAYAN, Senior Technical Assistant, NPL, New Delhi, has been awarded the Associateship of the Royal Photographic Society of Great Britain.

*SHRI HARISH GOEL, Senior Scientific Assistant, CBRI, Roorkee, has been elected a Graduate Member of the Institution of Structural Engineers, London.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory,
Jamshedpur

Up-grading of Fluorspar — Beneficiation tests on fluorspar from Ramorvali mine, Rajasthan (assaying CaF_2 , 21.14; SiO_2 , 58.80; CaCO_3 , 2.10; Al_2O_3 , 10.02; Fe_2O_3 , 0.76; Pb, 0.31; and S, 0.12 per cent.), carried out in two stages, produced metallurgical and acid grade concentrates assaying 84.9 and 96.53 per cent CaF_2 with recoveries of 87.2 and 49.4 per cent CaF_2 respectively. The two stages include desliming of sample followed by xanthate flotation and cleanings of the rougher floats obtained in the first stage. A rougher fluorspar float assaying CaF_2 , 70.09 and Pb, 0.12 per cent with a recovery of 88.3 per cent CaF_2 was obtained in the first stage.

Central Food Technological
Research Institute, Mysore

Test Kit for Detection of Ghee Adulteration — Baudouin test for the detection of adulteration of ghee with vanaspati can now be performed by the common man with the help of a test kit devised at the Institute. The kit consists of a corked test tube with a mark at the top, a sealed capsule containing 5 cc. of concentrated hydrochloric acid, a sealed capillary containing 0.4 cc. of 2 per cent solution of furfural in alcohol and a cutter.

For testing, the sealed ends of the capsule and the capillary are cut with the cutter and both are transferred into the tube with their broken ends downward. The test tube is corked and shaken slowly to facilitate the flow of liquids into the tube. Melted and clear ghee sample (5 cc.) is then added up to the mark on the test tube and it is corked and shaken gently sideways (and not upside down) for 2-3 minutes. The development of perceptible pink colour in the lower acid layer after 5-6 minutes,

indicates that the ghee sample is adulterated with vanaspati.

The kit (including chemicals) costs about 8 nP. and the recurring cost for each test is 3 nP.

Sponsored Research

Absorption of Microwaves in Organic Molecules — Variation of microwave absorption coefficient and electric susceptibility of methyl chloride, methyl bromide, ethyl chloride and ammonia in the vapour state, with pressure and temperature, has been studied in the X and the J bands.

The results indicate that the variation of absorption coefficient with change of pressure (up to one atmospheric pressure) can largely be explained by Van Vleck and Weisskopf's theory of absorption and dispersion due to pressure broadened lines. The absorption of 3 cm. waves in ethyl chloride is almost entirely due to Q branch transitions which are nearly at zero wave number. In methyl chloride, methyl bromide and ammonia it is due to inversion transition which is at zero wave number for methyl halides and at 0.79 cm^{-1} for ammonia. In the J band, an additional absorption has been observed and it has been assigned to the resultant effect of the various rotational transitions of the molecule.

The microwave absorption coefficient at low-pressure varied as T^{-3}

in the case of methyl chloride and ammonia and as $T^{-4.5}$ in the case of ethyl chloride. The variation of absorption coefficient confirms that the pressure broadening parameter varies inversely as the absolute temperature, as predicted by Anderson's or Margenau's theory of pressure broadening.

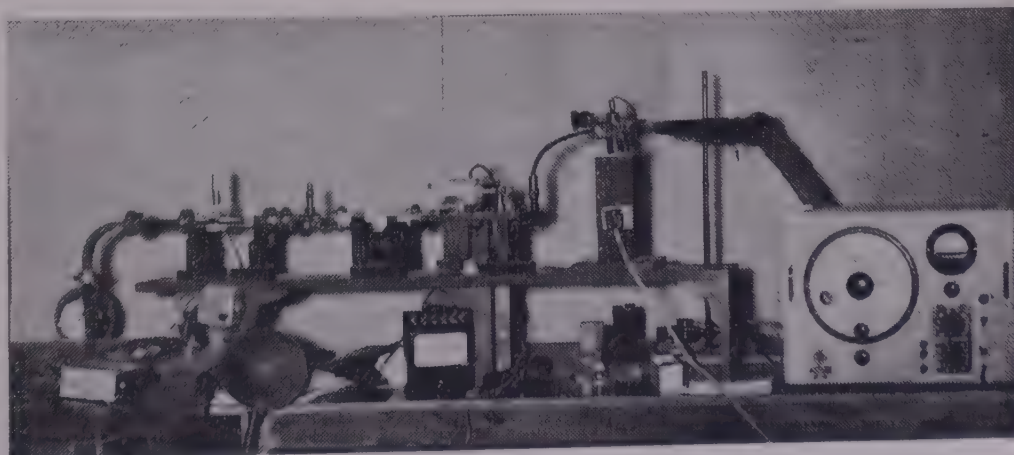
Variation of electric susceptibility with temperature was similar to that expected from Debye relation. The data on ethyl chloride have been used to determine the value of dipole moment and the sum of electronic and atomic polarisations of this molecule.

The measurements of absorption coefficient and electric susceptibility have been made with an experimental microwave bench designed and constructed in the laboratory. The set-up is capable of measuring absorption coefficient up to 0.000005 per cm. and electric susceptibility up to 0.00002 respectively — KRISHNAJI & G. P. SRIVASTAVA, Department of Physics, University of Allahabad.

Research Papers

SOLID-LIQUID EQUILIBRIA IN MIXTURES OF NON-ELECTROLYTES — R. P. Rastogi & K. T. Rama Verma, Lucknow University, Lucknow. *J. phys. Chem.*, 62 (1958), 641-44.

STRUCTURE OF IRON AND CHROMIUM DEPOSITED ON COPPER SINGLE CRYSTALS — A. Goswami, NCL, Poona. *Trans. Faraday Soc.*, 54 (1958), 821.



An experimental microwave bench set up at the Physics Department, Allahabad University under a CSIR sponsored research scheme

PATENTS & PROCESSES

Applications Filed

INDIA

64541: A reinforced bamboo structure like springs or beams—V. S. Goel, CRRI, New Delhi.

64554: A novel bearing—V. S. Goel, CRRI, New Delhi.

U.S.A.

740088: Process for the preparation of tridecane-1:13-dicarboxylic acid or its ester, suitable for the preparation of exaltone (cyclopentadecanone)—B. B. Ghatgey, U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

GERMANY

R 23 273 VI/18 d: Improvements in or relating to stainless steels—B. R. Nijhawan, P. K. Gupte, S. S. Bhatnagar & B. K. Guha, NML, Jamshedpur.

Applications Accepted

INDIA

59419: A process for the preparation of tridecane-1:13-dicarboxylic acid or its ester, suitable for the preparation of exaltone (cyclopentadecanone)—B. B. Ghatgey, U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

59497: Production of porous polymer suitable for preparing cation-exchange resins—K. P. Govindan, R. N. Pandya & N. Krishnaswamy, NCL, Poona.

59606: Preparation of cation-exchange resin from porous cashew nut Shell liquid polymer—N. Krishnaswamy, R. N. Pandya & K. P. Govindan, NCL, Poona.

59853: Improvements in or relating to the preparation of costus root oil and the isolation of lactonic constituents therefrom—G. R. Kelkar & S. C. Bhattacharyya, NCL, Poona.

62302: A process for the preparation of 1-w-ketodicarboxylic acid (or ester) suitable for the preparation of civetone and dihydrocivetone—K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

GERMANY

C 10 359 IVb/121: Improvements

in or relating to ion-exchangers from coal, peat, lignite or the like—R. P. Puri & P. K. Banerjee, CFRI, Jealgora.

Application Sealed

57013: A method for pre-treatment of non-coking, weakly coking and semi-coking coals for conversion to coking coals—A. Lahiri, A. N. Basu & S. S. Gupta, CFRI, Jealgora.

Process Ready for Exploitation

ARTIFICIAL PORCELAIN TEETH

A process for making Artificial Porcelain Teeth has been developed at the Central Glass & Ceramic Research Institute, Calcutta. The main raw materials, felspar and china clay, are available in the country. Colouring stains, palladium anchorages and gold-coated nickel pins are to be imported.

The process consists in mixing felspar and china clay in proper proportions and grinding to fine powder, removing traces of iron and mixing colouring strain to the powder, preparing a dough with an organic binder and water, passing the dough in moulds, finishing and firing.

Porcelain teeth prepared by the process compare favourably with imported teeth as proved by tests carried out at the Calcutta Dental College and Hospital and practising dentists. Annually, artificial teeth of value of Rs. 2-3 lakhs are imported into India.

Parties interested in undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation of India, Mandi House, New Delhi.

Process Leased Out

LIQUID RUBBER

The process for the production of Liquid Rubber developed at the National Chemical Laboratory, Poona (CSIR News, Vol. 7, No. 13, p. 3), has been leased out for commercial development to M/s Swastik Rubber Products Ltd., Poona.



SIR SECRETARIAT, NEW DELHI—Dr. K. S. Krishnan hoisting the national flag on Independence Day



CSIR

news

A Fortnightly News Bulletin

NEW DELHI-VOL. 8, NO. 18, SEPT. 27, 1958

ASVINA 5, 1880 **DUPLICATE**

MEETINGS & SYMPOSIA

A joint meeting of the *Scientific & Engineering Sub-Committees* of the Board of Scientific & Industrial Research will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Oct. 13, 1958 at 10.00 a.m.

A meeting of the *Board of Scientific & Industrial Research* will be held in the South Block, Central Secretariat, New Delhi, on Oct. 14, 1958 at 10.00 a.m.

A meeting of the *Governing Body* will be held in the South Block, Central Secretariat, New Delhi, on Oct. 15, 1958 at 10.00 a.m.

Chemotherapy in Bacterial and Viral Infections

A symposium on *Chemotherapy in Bacterial and Viral Infections* will be held at the Central Drug Research Institute, Lucknow, during Oct. 26-27, 1958. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, has kindly consented to inaugurate the symposium.

The following aspects of the subject will be discussed at the symposium:

BACTERIAL INFECTIONS

- (1) Chemical constitution and biological activity in bacterial infections.
- (2) Newer trends in chemotherapy of tuberculosis and leprosy.
- (3) Chemotherapy and emergence of resistant forms of bacteria.
- (4) Synergism and antagonism.
- (5) Chemotherapy and antibiotics.

VIRAL INFECTIONS

- (1) Methods for testing compounds for virus inhibition.
- (2) Structure and multiplication of viruses.
- (3) Effect of chemicals on virus growth.

Personal

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been appointed by the Government of India a Director of the *National Industrial Development Corporation (Private) Ltd.*, New Delhi, for a period of one year with effect from Aug. 18, 1958.

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been nominated a member of the reconstituted Advisory Committee of the *Harcourt Butler Technological Institute*, Kanpur, for a period of one year with effect from Aug. 1, 1958.

*PROF. M. V. BOPARDIKAR has been appointed Assistant Director, Central Public Health Engineering Research Institute, with effect from July 7, 1958.

Born at Hyderabad (Dn.) on Oct. 7, 1913, Prof. Bopardikar graduated from the College of Engineering, Poona, in 1937. He started his career as a Railway Officer and later worked as Executive Engineer, Poona Cantonment (1944-47); Public Health Engineer, Government of Bombay (1947-54); and Professor of Public Health Engineering, College of Engineering, Poona (1954-58).

He is the author of the *Hand Book of Public Health Engineering Practice in India* (2 volumes).

Prof. Bopardikar is a Member of the *Royal Sanitary Institute* (London) and an *Associate Member of the Institution of Engineers*. He is a "life time" University Professor of the Poona University in Public Health Engineering and is a member of the Academic Council of the University.

*The Vice-President, CSIR, has been pleased to accord approval to the regular officiating appointment of SHRI R. C. TEWARI as Assistant Editor (*Vigyan Pragati*), Publications Directorate, New Delhi.

*DR. B. S. LULLA has been appointed, on promotion, Senior Scientific Officer: Grade II, RRL, Hyderabad, with effect from Aug. 12, 1958.

*SHRI R. V. G. RAO has been appointed Junior Scientific Officer, NCL, Poona, with effect from Aug. 9, 1958.

*SHRI KRISHAN KANT has been appointed, on promotion, Field Officer, National Register Unit (CSIR), New Delhi, with effect from Aug. 23, 1958.

*SHRI B. R. SAXENA has been appointed, on promotion, Junior Technical Officer, National Register Unit (CSIR), with effect from Aug. 23, 1958.

*SHRI S. P. KAUSHIKA has been appointed, on promotion, Section Officer: Grade III, CSIR Secretariat, New Delhi, with effect from Aug. 2, 1958.

*SHRI TRILOK SINGH BAWA has been appointed, on promotion, Section Officer: Grade III, CSIR Secretariat, New Delhi, with effect from Aug. 28, 1958.

(Contd. on p. 2, col. 3)

B R I E F S

Essential Oils and Aromatic Chemicals

The proceedings of the symposium on *Essential Oils and Aromatic Chemicals* held under the joint auspices of the CSIR and the Forest Research Institute & Colleges at Dehra Dun during Oct. 6-9, 1955 have been published.

The publication includes seventy original papers grouped under three sections, namely (1) general aspects, such as the essential oil resources of various geographical regions of India, manufacture of essential oils, and the status of the essential oils industry; (2) cultivation of aromatic plants; and (3) chemical analysis of volatile oils and natural and synthetic perfumes. Besides presenting an overall picture of the progress of work in the field of essential oils and aromatic chemicals, it focuses attention on the prodigious, but untapped, wealth of aromatic plants available in the country with suggestions for their exploitation. The publication is useful to those connected with the essential oil industry and scientists engaged in research on aromatic raw materials and isolates.

Copies of the publication (Price, Rs. 10) are available from the Publications Directorate, CSIR, New Delhi.

National Register of Scientific and Technical Personnel

OCCUPATIONS OF SCIENTIFIC AND TECHNICAL PERSONNEL

The National Register Unit of the CSIR has made an occupational analysis of the scientific and technical personnel in India from the card index record (*CSIR News*, Vol. 8, No. 12, p. 2) and published the results in the form of a report entitled, *Occupations of Scientific and Technical Personnel in India—Part I*. The report gives a broad picture of the employment and occupational pattern of the scientific and technical personnel in public and private sectors and provides a preliminary basis for assessing the distribution of technical personnel of different age groups in fields such as research, teaching,

technical occupation and administration.

The report is based on the analysis of particulars of 15,700 personnel of ten different categories, (Physicists, Mathematicians, Chemists, Biological Chemists, Pharmaceutical Chemists, Industrial Chemists & Chemical Technologists, Geologists & Mineralogists, Bioscientists, Mining Engineers and Metallurgical Engineers).

Copies of the publication are available from the National Register Unit, CSIR, New Delhi.

"INDIANS ABROAD"

The publication of first numbers of the "Indians Abroad" directories of engineers (Series E), Scientists & Technologists (Series ST), Medical Personnel (Series M) and Business Administrators & Accountants (Series B & A) by the National Register Unit, have been noted in earlier issues (*CSIR News*, Vol. 8, Nos. 7, 8 & 11). The second numbers of the directories of Engineers, and Scientists & Technologists have been recently published. The directories include the names and brief particulars of 309 engineers and 174 scientists & 53 technologists. Copies of the directories are being distributed to employing agencies.

Demonstration of Patented Processes

The National Metallurgical Laboratory, Jamshedpur, arranged for the first time, practical demonstration of patented processes released free of royalty with a view to disseminate the technical know-how to industries. Representatives of industries (metal works, foundry, electroplating, electrical goods) and Small Industries Service Institute, Calcutta, attended the demonstrations. The following processes were demonstrated: (1) Electroplating of metals on aluminium; (2) chemical polishing of aluminium; (3) brass plating from non-cyanide bath; and (4) metalisation of non-conductors. The demonstration lasted from Sept. 1 to 5, 1958.

The Central Glass & Ceramic Research Institute, Calcutta, arrang-

ed the practical demonstration of the process (Indian Pat. Nos., 51847 & 55453) for making red bangles using copper as the colorant (in place of selenium which is imported) at a local factory in Firozabad during the last week of August 1958. The production of following types of red bangles in different designs was demonstrated at the factory: Plain, Reshmi, China and embossed. About 30 representatives of the glass bangle industry witnessed the demonstration.

PERSONAL

(Contd. from p. 1, col. 3)

*DR. C. CHENNA REDDY, Senior Scientific Officer, RRL, Hyderabad, relinquished charge of his post with effect from Aug. 11, 1958, to take up appointment as Asst. Professor in the Western Higher Technological Institute, Bombay.

* * *

*DR. B. S. R. SASTRY, Scientific Officer, RRL, Hyderabad, who had been to U.S.A. for higher studies, resumed duties with effect from Aug. 16, 1958. Dr. Sastry obtained M.S. (Ceramic Engineering) from the University of Washington and Ph.D. degree from the Pennsylvania State University for his thesis, *Phase Equilibria and Liquid Immiscibility in the System Lithia-Boric oxide-Silica*.

*DR. M. D. NARASIMHAN, Senior Scientific Assistant, RRL, Hyderabad, who had been to U.S.A. for higher studies, resumed duty on July 16, 1958. During his stay at U.S.A., Dr. Narasimhan was awarded S.M. (Ceramics) and Sc.D. (Ceramics) degrees by the Massachusetts Institute of Technology, and membership of the Sigma XI Society.

* * *

*SHRI A. GHOSAL, Statistical Officer, CFRI, Jealgora, has been elected an Associate of the Institute of Actuaries, London.

*SHRI K. L. ARORA, Junior Scientific Officer, CDRI, Lucknow, has been awarded the Ph.D. degree by the Panjab University for his thesis, *Studies on the Effect of Antibacterial Agents on Enzymes in Relation to their Mode of Action*.

RESEARCH IN PROGRESS

National Laboratories

National Chemical Laboratory,
Poona

Preparation of Niobium and Tantalum Oxide—A liquid-liquid extraction method for simultaneously preparing pure niobium oxide (containing less than 0.1 per cent tantalum pentoxide) and tantalum oxide (containing less than 0.1 per cent niobium pentoxide) from Indian tantalum-niobate minerals has been developed. The solvents used for extraction in the process are indigenous.

Central Fuel Research Institute,
Jealgora

Diesel Oil from Low-temperature Tar—Investigations have been in progress for producing suitable grades of diesel oils economically by hydrogenation of low-temperature carbonization tar fractions.

Hydrogenation of untreated Upper Kajora tar fraction (distilled at 250-300°C.) in a batch autoclave using a nickel complex catalyst (developed at the Institute) produced a superior quality diesel oil. At a high catalyst concentration (10 per cent), high initial pressure of hydrogen and temperature of 400°C., the conversion of tar acids and bases to hydrocarbons was almost quantitative and the resulting products contained 72 per cent of saturates. With progressively decreasing amount of catalyst and at 450°C., the yield and quality of diesel oil obtained were unsatisfactory but the conversion of tar acids and bases was complete. The conversion of tar acids in tar fraction (distilled at 300-350°C.) when hydrogenated at 400°C., was satisfactory but the conversion of bases is not complete. At higher temperatures, a higher yield of oil boiling within the gasoline range (60-200°C.) with corresponding decrease in diesel oil fraction was obtained.

Similar experiments were carried out on the neutral oil fractions b.p. range, 200-250°C., 250-300°C. and 350-400°C. using nickel com-

plex catalysts of varying composition with different percentage of promoter. The yield of diesel oil from neutral oil (b.p., 200-250°C.) varied from 53.5-79.9 per cent; with the fraction, b.p., 250-300°C. slightly higher yield was obtained. A catalyst (4 per cent concentration) consisting of a metal sulphide of Group VI of the Periodic Table produced 73 per cent diesel oil fraction (with 74 per cent saturates) from the fraction, b.p., 250-300°C.

Central Food Technological
Research Institute, Mysore

Canning of Drinking Water—Canned drinking water forms an important article of the emergency rations for the armed forces. The Indian requirement for canned water is met by imports from U.K.

Investigations carried out at the Institute, at the instance of the Union Ministry of Defence, have resulted in standardisation of a process for canning drinking water. The canned water prepared by the process keeps well under adverse conditions of storage at 37°C. and conforms to the rigid physical, chemical and bacteriological specifications.

Sponsored Research

SCHEME IN PROGRESS

Crystal Structure of Frozen Organic Liquids at Low Temperatures—Debye-Scherrer patterns of frozen pyridine and its solution in alcohol photographed at -180°C. show that frozen pyridine crystallises in two different habits. Analysis of the patterns by Lipson's method has shown that both these habits belong to the orthorhombic system. The restriction regarding the reflections from different planes observed in these patterns show that the two modifications belong to the space group Q^1_h and Q^2_h respectively. The frozen solutions yielded only halos and are amorphous.

Similar photographs with frozen chlorobenzene and bromobenzene have been obtained using an im-

proved Debye-Scherrer camera with arrangement for rotating the sample continuously during exposure. Some of these photographs resemble those due to rotating single crystals. Preliminary analysis shows that both these substances crystallise in orthorhombic system—S. C. SARKAR & S. G. BISWAS, Indian Association for the Cultivation of Science, Calcutta.

COMPLETED SCHEME

Thermal Diffusion and Inter-diffusion of Gases—The intermolecular forces between unlike molecules—a knowledge of which is useful for fundamental and applied research particularly for the separation of isotopes—have been determined by the methods of thermal diffusion and inter-diffusion of gases.

As a preliminary to the investigation, a differential conductivity analyser was constructed and thermal conductivities of helium, neon, argon, krypton and xenon and different compositions of their binary and ternary mixtures were measured. The absolute conductivities were also determined and formulae have been proposed for calculating the thermal conductivity of binary and ternary mixtures.

The conductivity analyser has been used in investigations on thermal diffusion and inter-diffusion in gases. Two diffusion baths connected by a precision capillary tube were immersed in suitable temperature baths and the change in composition in one of the baths due to inter-diffusion was recorded by means of the analyser. From the change in composition, the coefficient of inter-diffusion for the gas pairs Ne-A, Ne-Kr, A-He, A-Xe and He-Xe was measured at different temperatures and from this the unlike intermolecular potentials were evaluated.

Besides, theoretical investigations on thermal diffusion, inter-diffusion and other transport properties have been carried out. Various collision integrals occur-

ring in higher approximations to the diffusion coefficients were evaluated. A modification of the method of evaluating the force constants from these coefficients has been developed. Like and unlike potential parameters on the 12:6 and exp-six models have been calculated utilizing Chapman—Cowling and Kihara approximations and suitable combining rules have been developed on the latter model for the potential parameters of unlike molecules—B. N. SRIVASTAVA, S. C. SAXENA & K. P. SRIVASTAVA, Lucknow University, Lucknow (May 1953 to March 1958).

Research Papers

CLASSICAL APPROACH TO THE STRUCTURE OF CONDENSED RING AROMATIC COMPOUNDS—A REJOINER TO THE PROBLEM OF DIBENZO (cd, mn) PYRENE—Lakhsbir Singh, NCL, Poona. *Canad. J. Chem.*, **36** (1958), 1928.

A NEW APPROACH TO THE DIAMAGNETIC ANISOTROPY OF BENZENE—THE ANISOTROPY OF SIGMA-ELECTRONS—Lakhsbir Singh, NCL, Poona. *Trans. Faraday Soc.*, **54** (1958), 1117.

SOLID-LIQUID EQUILLIBRIA IN MIXTURES OF NON-ELECTROLYTES—R. P. Rastogi & K. T. Rama Verma, Lucknow University, Lucknow. *J. phys. Chem.*, **62** (1958), 641-44.

STRUCTURE OF IRON AND CHROMIUM DEPOSITED ON COPPER SINGLE CRYSTALS—A Goswami, NCL, Poona. *Trans. Faraday Soc.*, **54** (1958), 821.

ON THE BOUNDS OF ELGIN VALUES OF A CLAMPED PLATE IN TENSION—R. K. Kaul & S. G. Tewari, NPL, New Delhi. *J. appl. Mech.*, **25** (1958), 52-57.

ALUMINING OF STEEL BY THE FLUX PROCESS—S. M. Arora, P. K. Gupte, & B. R. Nijhawan, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **11** (1958), 57-72.

PREPARATION OF TITANIUM-ALUMINIUM ALLOYS BY ALUMINO-THERMIC REDUCTION: PART II—BY USE OF ENERGISERS—R. A. Sharma, A. N. Kapoor & A. B. Chatterjee, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **11** (1958), 89-99.

PATENTS & PROCESSES

Applications Accepted

58902: A process for the preparation of 9:10 thiopegan derivatives containing phenolic hydroxy groups—K. S. Narang, H. S. Sachdev & K. S. Dhami, Panjab University, Hoshiarpur.

58903: Preparation of 2-hydroxy and 2-chlorothiazoles containing phenolic residues in position 4—K. S. Narang, H. S. Sachdev & K. S. Dhami, Panjab University, Hoshiarpur.

60866: A process for the preparation of an adsorbent clay from alluvial soils like chikni mitti for the recovery of vitamin B₂ (riboflavin) from natural resources or fermented products—S. C. Agarwala & T. Sen, CDRI, Lucknow.

60867: Processing of banana pseudostem for use as cushioning material—N. V. R. Iyengar, B. Anandaswamy & H. B. N. Murthy, CFTRI, Mysore.

61439: Preparation of 2-chlorothiazoles containing phenolic residues in position 4—K. S. Narang, H. S. Sachdev & K. S. Dhami, Panjab University, Hoshiarpur.

Applications Sealed

58554: A process for reducing hygroscopicity and caking of ammonium nitrate fertiliser—R. Saxena, D. S. Datar & S. H. Zaheer, RRL, Hyderabad.

58756: Improvements in the manufacture of maleic anhydride—R. T. Thampy & I. K. Suri, Shri Ram Institute for Industrial Research, Delhi.

58757: An improved cyphon—C. R. Gupta, NPL, New Delhi.

58869: Refractory compositions comprising graphite and silicon carbide—T. V. Prasad, H. P. Srinivasamurthy & Rabinder Singh, NML, Jamshedpur.

Process Ready for Exploitation

REFINING OF SUGARCANE WAX

A process (Indian Pat. No. 47179) for refining and modification of sugarcane wax (obtained from press mud or lime sludge) has been developed at the National Chemical Laboratory, Poona. The refined wax and the modified waxes prepared from it can suitably replace imported carnauba, montan and other similar waxes in leather and floor polishes, carbon papers and printing ink industries. Press mud—a waste product of sulphitation sugar factories—is available in large quantities.

The process consists in the oxidation of crude wax with potassium or sodium dichromate and sulphuric acid and chemical modification of the oxidised wax by preparing its esters and amide derivatives.

The process has been carried out on 10 lb. scale and no difficulties are anticipated in adopting it on commercial scale. The equipment required can be fabricated locally.

Parties desirous of undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation, Mandi House, New Delhi-1.

NEW PUBLICATION

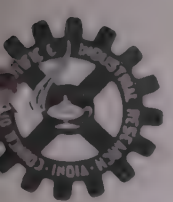
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A Fortnightly News Bulletin

NEW DELHI—VOL. 8, NO. 20, OCT. 23, 1958
KARTIKA 3, 1880

CENTRAL FUEL RESEARCH INSTITUTE TO UNDERTAKE INVESTIGATIONS ON NATURAL GAS & PETROLEUM

Governing Body's Decisions

The Board of Scientific & Industrial Research and the Governing Body of the Council of Scientific & Industrial Research met on October 14—15, 1958 in New Delhi. The Prime Minister, Shri Jawaharlal Nehru presided.

Research on Natural Gas & Petroleum

The Governing Body decided that the Central Fuel Research Institute, Jealgora, should be equipped with necessary facilities for undertaking work relating to the analysis of natural gas and petroleum and the utilisation of natural gas and petroleum for the production of petrochemicals. A committee consisting of the following has been constituted for formulating detailed proposals: Prof. M. S. Thacker (Chairman), Shri K. K. Sahni, Dr. A. Lahiri, Dr. J. W. Whitaker, Shri A. B. Guha, Dr. K. Venkataraman, a representative each of the Oil & Natural Gas Commission and Ministry of Commerce & Industry, two representatives from oil refineries and a chemist of the Sindri Fertiliser Factory (Members).

The Central Fuel Research Institute has already started investigations on natural gas and petroleum.

Pool of Trained Scientists

The question of utilising scientific and technical personnel returning from abroad has been under consideration, for sometime, by the Government of India and the CSIR.

With the approval of the Manpower Sub-Committee of the Cabinet, the National Register Unit of the CSIR is registering and publishing classified information on Indian scientists and technologists in foreign countries. The persons registered in the National Register are treated as 'personal contact' candidates by the Union Public Service Commission.

With a view to ensuring that no qualified technical persons remain unemployed for long periods after their return from abroad, a scheme for temporary placement of such persons has been approved by the Manpower Sub-Committee of the Cabinet. It has been decided that

the responsibility for administering the pool should be that of the Council. A committee consisting of Prof. M. S. Thacker as Chairman and representatives of various ministries of the Government of India, University Grants Commission and private industry has been constituted to advise the Council on the administration of the pool.

The authorised strength of the pool will be 100 to start with. Recruitment to the pool will be through a Special Recruitment Board to be constituted for the purpose with the Chairman or a member of the UPSC as Chairman

(Contd. on p. 4, col. 1)



SCIENCE PAVILION, 'INDIA 1958' EXHIBITION—The Prime Minister, Shri Jawaharlal Nehru accompanied by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, visited the Pavilion on Oct. 10, 1958. He is seen here observing the working of the 'hearing aid' apparatus developed at the NPL, New Delhi.

NEW RESEARCH SCHEMES SANCTIONED

On the recommendation of its Advisory Board, the Governing Body of the Council have sanctioned the following new research schemes.

1. & 2. Characteristics of Indian sewage; Use of membrane filters—Prof. S. J. Arceivala, Head of the Department of Civil and Sanitary Engineering, V. J. T. Institute, Bombay.
3. & 4. Quantitative significance of growth of plankton in relation to water quality; Significance and value of various biological indices of pollution of water—Shri H. L. Sarkar, Lecturer in Zoology, Delhi University, Delhi.
- 5 & 6. A definitive comparative investigation of the British Ministry of Health and American Public Health Association techniques for quantitative detection of coliform group of bacteria; Micro-filter and its relation to other techniques for estimating coliform densities—Shri R. S. Mehta & Dr. S. V. Ganapati, Municipal Corporation of Delhi, Delhi.
7. Relation of iron porphyrin enzymes to induced iron deficiency with special reference to heavy metals—Dr. S. C. Agarwala, Reader in Botany, Lucknow University, Lucknow.
8. Morphological and embryological investigations of some families and genera of disputed systematic position—Dr. M. Anant-swamy Rau, Regional Botanist, Botanical Survey of India, Dehra Dun.
9. A comparative study of the cytology, cytochemistry and cytophysiology of the avian adrenal gland—Dr. Asok Ghosh, Lecturer in Zoology, Calcutta University, Calcutta.
10. Cyto-ecological studies on the mangrove flora of India—Dr. R. P. Patil, Botanist, Central Botanical Laboratory, Botanical Survey of India, Allahabad.
11. Phyto-sociology, ecology and phyto-geography of the vegetation of the humid tropics in the Western Circle of the B.S.I. (comprising of the States of Mysore and Kerala) and study of the environment, soil, geology, etc.—Dr. G. S. Puri, Regional Botanist, Botanical Survey of India, Poona.
12. X-Ray studies on the structures of amino-acids, peptides and proteins—S. N. Bagchi, Professor of Chemical Physics, Calcutta University, Calcutta.
- 13 & 14. Total synthesis of aldosterone and conessine; Total synthesis of triterpenoids—Dr. P. C. Mukherji, Professor of Chemistry, Presidency College, Calcutta.
15. Synthetic studies in triterpenoids—Dr. P. C. Dutta, Head of the Department of Organic Chemistry, Indian Association for the Cultivation of Science, Calcutta.
16. Enzymes from some vegetable sources—Dr. R. L. Nath, Professor of Biochemistry, School of Tropical Medicine, Calcutta.
17. Distribution of carrier free radioactive tracers between solids and liquids—Dr. K. R. Kar, Department of Chemistry, University of Delhi, Delhi.
18. Degree of branching in high molecular weight organic compounds—Dr. M. Santappa, Reader in Physical Chemistry and Head of the Department, University of Madras, Madras.
19. Thiocyanates and isothiocyanates—Dr. K. S. Narang, Reader in Organic Chemistry, Panjab University, Hoshiarpur.
20. Study of small angle scattering in fibres and films of cellulose including jute—Dr. S. C. Roy, Senior Physicist, Indian Jute Mills' Association Research Institute, Calcutta.
21. Microbial synthesis of proteins in relation to the biogenesis of nucleic acid—Dr. D. P. Burma, Bose Research Institute, Calcutta.
22. Chemical investigations relating to the synthesis of 3:4-disubstituted piperidines: Synthesis of meroquinine, homomeroquinine and quinine—Prof. Gurbakhsh Singh, Panjab University College, Hoshiarpur.
23. Analytical aspect of organic compounds: Determination of rare metals like thorium, zirconium, uranium, etc. with organic reagents—Dr. S. K. Dutta, Government College, Darjeeling.
24. Synthesis of new antispasmodics in the isoquinoline series—Dr. T. N. Ghosh & Dr. A. N. Bose, Bengal Immunity Research Institute, Calcutta.
25. Chemical and pharmacological investigation of *Ervatamia coronaria* Stapf. and other species belonging to the same genus—Dr. N. K. Basu, Department of Pharmacapeutics, Banaras Hindu University, Banaras.
26. Usnic acid—its derivatives and preparations made for anti-tubercular tests and other clinical trials—Dr. T. A. Venkitasubramanian & Dr. S. Neelakantan, Delhi University, Delhi.
27. Synthetic investigation in carcinogens and anticarcinogens—Dr. S. M. Mukherjee, Head of the Chemistry Department, Panjab University, Hoshiarpur.
28. Chemical investigation of Indian *Rhododendron* species—Prof. S. Rangaswamy, Head of the Department of Pharmacy, Andhra University, Waltair.
29. Chemotherapy of amoebiasis—Prof. A. B. Sen, Head of the Chemistry Department, Lucknow University, Lucknow.
30. Effects of ionising radiations on micro-organisms—Prof. N. N. Das Gupta, Head of the Biophysics Division, Institute of Nuclear Physics, Calcutta.
31. Radiation injury in cell systems—Dr. K. S. Korgaonkar, Research Officer, Indian Cancer Research Centre, Bombay.

(Contd. on p. 4, col. 3)

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory,
Jamshedpur

Electrowinning of Chromium—Experiments on the preparation of pure electrolytic chromium from chromic acid bath (using lead and aluminium sheets as anode and cathode respectively) at various current densities and temperatures (30–50°C.) have shown that the metal can be prepared electrolytically at a current density of 2 amps./sq. in. and temperature 30–32 °C. with current efficiency of 22 per cent.

Flux for Union Melt Welding—Calcium silicate glasses with other minor constituents used as flux for union melt welding are not produced so far in the country.

As a result of conducting several trial melts and studying the products under the microscope, a flux similar in composition and physical properties to the imported variety has been developed. Practical trials are proposed to be undertaken.

Central Salt Research Institute,
Bhavnagar

Sodium Sulphate from Khari Salt of Bihar—A simple process, based on the application of phase rule, has been worked out for the recovery of high-grade sodium sulphate from khari salt (70-76 per cent sodium sulphate) found in Bihar State. Khari salt occurs as a thin white efflorescence on old mud heaps, mud walls and waste dumping places. The estimated annual exudation of khari salt in the state is approximately 12,000 tons.

Sponsored Research

Coke from High-ash and High-Volatile Coals—Pilot oven tests were carried out using blends of washed coals from Jamadoba (ash, 14.23 per cent) and West Bokaro (ash, 14.12 per cent) in admixture with high ash coals from the Bhojudih area (Hurruladih, Burragarh, Ballihari and Bhowrah

seams) and high volatile coals from Dishergarh seam (Raniganj coal-field). The ash contents of Hurruladih, Burragarh and Dishergarh seam coals were 16.67, 15.77 and 14.10 per cent respectively. The tests indicated that hard coke (according to Breslau index) could be obtained from the blend (grain size, 80-100 per cent through 1/8 in.) containing 62 per cent Jamadoba-West Bokaro coal mixture, 30 per cent Hurruladih-Burragarh coal mixture and 8 per cent Dishergarh coal. The bulk density of the blend decreased with the increase in moisture content of the charging coal. The blend (grain size, 80 per cent through 1/8 in.) containing 62 per cent of Jamadoba-West Bokaro coal mixture and 38 per cent Hurruladih-Burragarh coal mixture produced medium hard coke.

The blend (grain size, 80 per cent through 1/8 in.) containing 62 per cent of Jamadoba-West Bokaro coal and 38 per cent of a mixture of Ballihari 15 & 16 seam (ash, 16.14 per cent) and Bhowrah 10 to 12 seam coal (ash, 17.21 per cent) produced hard coke. The blend containing 62 per cent Jamadoba-West Bokaro coal mixture, 30 per cent Ballihari 15

& 16 seam-Bhowrah 10 to 12 seam coal mixture and 8 per cent Dishergarh seam coal also produced hard coke—**COAL BLENDING & COKING RESEARCH SUB-COMMITTEE**, Jamshedpur.

Research Papers

DETERMINATION OF FREE LIME IN LIME AND SILICATE PRODUCTS: PART I—M. R. Verma, V. M. Bhuchar, (Miss) K. J. Therattil & S. S. Sharma, NPL, New Delhi. *Analyst*, 83 (1958), 160-68.

ON THE BOUNDS OF EIGENVALUES OF A CLAMPED PLATE IN TENSION—R. K. Kaul & S. G. Tewari, NPL, New Delhi. *J. appl. Mech.*, 28 (1958), 52-56.

OCCURENCE OF RAUVOLFIA SERPENTINA BENTH IN FORESTS OF WESTERN CIRCLE, UTTAR PRADESH—V. Chandra, NBG, Lucknow. *J. Indian bot. Soc.*, 37 (1957).

MICROSEISMS ASSOCIATED WITH NORWESTERS—S. K. Chakrabarty & D. Sarkar, Bengal Engineering College, Howrah. *Bull. seismol. soc. Amer.*, 48 (1958), 181-89.

SYNTHESIS OF 5-METHOXY-2-INDANONE—A. Chatterjee, R. C. Chatterjee & B. K. Bhattacharyya, Jadavpur University, Calcutta. *J. Indian chem. Soc.*, 35 (1958), 391-98.



SCIENCE PAVILION, 'INDIA 1958' EXHIBITION—The Prime Minister, Shri Jawaharlal Nehru looking through a specimen of optical glass produced at the CGCRI, Calcutta.

Water Purification and Stream Pollution

A symposium on Water Purification and Stream Pollution will be held under the auspices of the Central Public Health Engineering Research Institute at Vigyan Bhawan, New Delhi on October 30, 1958. Public Health Engineers and City Engineers from all states and corporations are expected to participate in the symposium.

The following aspects of the subject will be discussed at the symposium:

Methods of water purification; Comparative study of the British & American bacteriological standards for drinking water; and the Problem of filtration of water supplied to Greater Bombay area.

River sanitation; River pollution & waste treatment; and Stabilisation ponds—Use of algae in anti-biotic waste treatment.

Endemic fluorosis in India; and Virus pollution.

Chemotherapy in Bacterial and Viral Infections

The symposium on Chemotherapy in Bacterial and Viral Infections (CSIR News, Vol. 8, No. 18, p. 2) will be held at the Central Drug Research Institute, Lucknow, during Nov. 2—3, 1958.

GOVERNING BODY'S DECISIONS

(Contd. from p. 1, col. 3)

of the pool. The services of scientists in the pool will be placed at the disposal of various industrial establishments in the private and public sectors, Government departments, universities or research and scientific institutions, till they are absorbed suitably. The pool will also include a certain proportion of scientists in India holding high qualifications.

Pilot Plant Projects

A project for the production of ceramic and glass articles (crucibles, combustion boats, furnace plates and muffles, ceramic colours, enamelled articles, glass electro-

des, etc.) at the Central Glass & Ceramic Research Institute, Calcutta, was approved. Studies carried out at the Institute have provided basic data for producing these articles on a pilot plant scale. The demand for these articles, which are at present imported, is small and no industrialist is prepared to take up their commercial production. The project will meet the present demand of the industry, save foreign exchange, and encourage the production of similar articles by private parties.

Other proposals accepted by the Governing Body include clinical testing of new drugs evolved at the Central Drug Research Institute, Lucknow, at a number of hospitals in the country.

Approval was granted to the setting up of the following pilot plants: (i) Production of synthetic oils—CLRI, Madras; (ii) Manufacture of dairy salt—CSRI, Bhavnagar; and (iii) Production of diesel oil by coal tar hydrogenation; Fine coal washing; and High pressure briquetting—CFRI, Jealgora.

Institutes & Centres

Plans for the establishment of the Central Mechanical Engineering Research Institute at Durgapur and Central Public Health Engineering Research Institute (CPHE) at Nagpur were approved. With a view to giving practical shape to its functions the CPHE Institute, proposes to set up field centres and mobile units at various places in the country.

The scope of work and plan for the new building of the Indian Institute for Biochemistry & Experimental Medicine, Calcutta, were approved.

Survey and cultivation of medicinal plants, investigations on plant diseases and plant preservation and analysis of drugs are included in the approved programme of work of the Regional Research Laboratory, Jammu.

The Central Indian Medicinal Plants Organisation for which a tentative plan was accepted, will

mainly concentrate on the development of cultivation and utilisation of medicinal plants on an organised and coordinated basis. The Organisation will function through four zonal units. The constitution of an Executive Council for the Organisation was approved.

A Station for field experiments under the Central Salt Research Institute, Bhavnagar and four Regional Centres under the National Metallurgical Laboratory, Jamshedpur for the development of foundries, are to be established.

Research Schemes & Symposia

Grants-in-aid to 36 research schemes (page 2) were approved.

The emolument attached to Junior Research Fellowships awarded by the CSIR was raised to Rs. 250 p.m., fixed.

Approval was given to the holding of a symposium on 'Plant and Equipment in Food Industries' at the CFTRI, Mysore during the next year.

NEW RESEARCH SCHEMES

(Contd. from p. 2, col. 3)

32. Electron microscopic study of different intra-cellular structures and of the virus and its role in the process of carcinogenesis—Dr. Subodh Mitra, Chittaranjan Cancer Hospital, Calcutta.

33, 34 & 35. Temperature stresses in rigid pavements under Indian conditions; Skid resistance of road surface; Effect of size on the compressive strength of soil blocks—The Chief Engineer (Highways), Madras.

36. Design and construction of the equipment for the display of bearings in aircraft—Ft. Lt. K. S. Bhatia & Pilot Officer V. Subramanian, Directorate of Technical Services, Air Headquarters, New Delhi.

Besides, a block grant of Rs. 14,000 per annum was sanctioned to the National Institute of Sciences of India, Delhi, for instituting two Senior Research Fellowships.



A Fortnightly News Bulletin

NEW DELHI—VOL. 8, NO. 21, NOV. 8, 1958
KARTIKA 17, 1880

CFTRI Mobile Demonstration Unit Inaugurated

Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, inaugurated on Oct. 30, 1958 at the Central Secretariat, CSIR, New Delhi, the CFTRI Mobile Demonstration Unit (part of Extension Service). Dr. V. Subrahmanyam, Director, CFTRI, and Mr. H. K. S. Lindsay, Deputy Managing Director of the *Metal Box Company* were present at the function. A specially designed motor van fitted with necessary equipment was presented by the *Metal Box Company* on the occasion.

The unit will demonstrate inexpensive techniques of canning vegetables and fruits at home for the benefit of housewives. The first demonstration will be given at the Lady Irwin College, New Delhi, during the second week of Nov. 1958. Demonstrations will

also be arranged at other centres in Delhi after which the Unit will move to other parts of the country.

Personal

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been re-elected Vice-President, *Indian Science News Association* for the year 1958-59.

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been nominated Chairman of the reconstituted Advisory Committee of the *Harcourt Butler Technological Institute*, Kanpur.

* * *

*SHRI TEJBIR S. KHANNA has been appointed, on promotion, Asst.

Director (Traffic), CRRI, New Delhi, with effect from July 26, 1958.

Shri Khanna (b. in Panjab, 1927) after graduation in 1947 proceeded to U.S.A. for higher studies. He obtained B.S. and M.S. degrees in Civil Engineering from Colorado University in 1950 and 1953 respectively. On his return, he joined the CRRI and worked on different problems of road traffic and published a number of papers and reports. He is a member of the Indian Roads Congress, Illuminating Engineering Society of India and National Safety Council, U.S.A.

*The following have been appointed, on promotion, Junior Scientific Officers, CFTRI, Jealgora, with effect from the date given against their names:

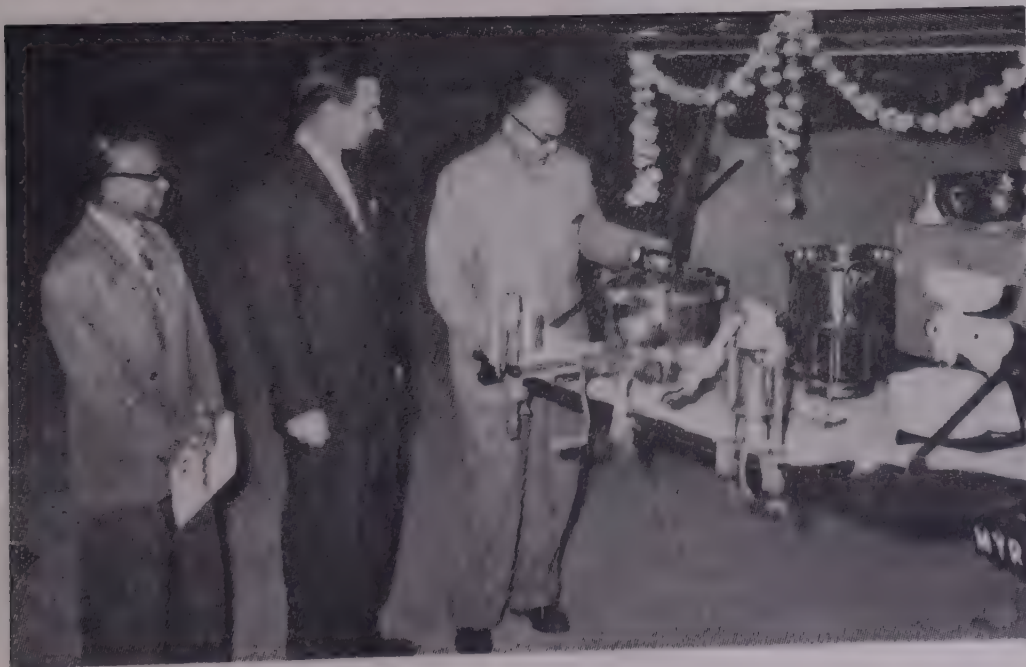
SARVASHRI B. B. BARUAH (Jan. 25, 1958); A. K. CHAKRAVARTY, S. S. CHOWDHURY and S. K. SEN GUPTA (March 31, 1958); B. S. DESHMUKH (April 3, 1958); S. C. ROY CHOWDHURY (April 4, 1958); SAROJ K. MAJUMDAR, S. P. NANDI, C. S. B. NAIR, J. N. BHOWMIK, M. M. SEN, H. C. CHAKRAVARTY and K. K. ROY CHOWDHURY (June 28, 1958); V. V. RAO (June 30, 1958); and K. S. ANAND (August 18, 1958).

* * *

*DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, joined the Indian delegation to the UNESCO Conference at Paris at the request of the Union Ministry of Education.

*DR. C. SIVARAMAN, Senior Scientific Officer, NCL, Poona, left for U.K. on Sept. 18, 1958 for studies on *Physico-chemical processes in the purification of proteins*, under the Colombo Plan.

(Contd. on p. 4, col. 1)



CSIR, NEW DELHI—Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, inaugurated the Mobile Demonstration Unit of CFTRI, Mysore on Oct. 30, 1958. Picture shows Prof. Thacker examining the equipment of the demonstration van.

BRIEFS

Water Purification and Stream Pollution

The symposium on Water Purification and Stream Pollution organised by the Central Public Health Engineering Research Institute (CPHE) was held at New Delhi on Oct. 30, 1958. Shri N. V. Modak, Director, CPHE Institute presided over the deliberations of the symposium. The symposium was attended by Public Health Engineers and City Engineers from all the States and corporations.

The following papers were read and discussed at the symposium: (1) *Water treatment* (Dr. B. V. Bhoota); (2) *Studies in connection with the filtration of water supplied to Greater Bombay area* (Shri N. V. Modak & Shri R. V. Abreu); (3) *A comparative study of the British and American bacteriological standards of purity for drinking water* (Shri R. S. Mehta & Dr. S. V. Ganapati); (4) *Some thoughts on river pollution control* (Prof. S. J. Arceivaia); (5) *River pollution by industrial wastes, antibiotic wastes—Treatment by algae* (Prof. M. V. Bopardikar); (6) *Industrial waste survey and river*

pollution studies in Bihar and U.P. States (Dr. T. R. Bhaskaran); (7) *Endemic fluorosis in India* (Dr. K. Venkataramanan); and (8) *Some disjointed remarks on stream pollution abatement* (Shri N. V. Modak).

Dr. C. G. Pandit gave a talk on 'Virus Pollution'.

Demonstration of Tanning Processes

The Central Leather Research Institute, Madras, arranged the practical demonstration of *E.I. Kip Tannage* and *Rapid Sole Leather Tannage* processes at Jullundur as part of Extension Services Programme. The demonstration, which commenced on Oct. 6, will continue till the end of November, 1958.

Training in Radar

The following candidates have been selected for 4-week practical training in Radar at Air Force Technical College, Bangalore. The course commenced on Oct. 20, 1958.

1. SHRI S. R. TEMBE—Tata Institute of Fundamental Research, Bombay.

2. SHRI M. SUBRAHMANYAM—Central Electronics Engineering Research Institute, Pilani.

3. KUMARI K. A. SARADA—National Physical Laboratory, New Delhi.

4. SHRI S. BALARAM—Directorate of Civil Aviation, New Delhi.

5. SHRI U. H. NARAYANAN—Central Electro-chemical Research Institute, Karaikudi.

6. SHRI J. K. SEN—University College of Science, Calcutta.

Fruit Technology Associateship Course

The following students have been declared successful in the final examination of the Associateship Course in Fruit Technology of the CFTRI, Mysore held in July 1958.

First Class: SARVASHRI L. J. SINGH, D. M. SAMUEL, C. RATNAM, H. A. CHENGAPPA, O. P. BEERH and S. N. RAGHAVENDRA RAO.

Second Class: SARVASHRI B. B. MAZUMDAR, N. V. SRIPATHY and K. R. SRIPATHY.

Third Class: SHRI A. N. SRIRANGARAJU.

Research Fellowships

The following have been awarded CSIR Fellowships for research in schemes noted against their names:

Senior Fellowship:

1. SHRI T. R. RADHAKRISHNAN—Phase converters—Rotary and static (P.S.G. College of Technology, Peelamedu).

2. SHRI S. H. IBRAHIM—Pilot plant preparation of ethylene oxide and products from the same (Shri Ram Institute for Industrial Research, Delhi).

Junior Fellowship:

1. SHRI A. S. BHATTACHARJEE—High frequency titrations (Jadavpur University, Calcutta).

2. SHRI DEOKI NANDAN PANDE—Special studies of certain uranyl salts (D.S.B. Government College, Nainital).

3. SHRI H. D. BIST—Special studies of certain uranyl salts (D.S.B. Government College, Nainital).



Dr. Rajendra Prasad, President of India, conferring the award of Padma Shri on Dr. L. A. Ramdas, Head of the Division of Heat & Power, NPL, New Delhi, at an investiture ceremony held at Rashtrapati Bhavan on Oct. 29, 1958.

RESEARCH IN PROGRESS

National Laboratories

Central Fuel Research Institute,
Jealgora

Reclamation of Alkaline Soil with Assam Coal—Investigations carried out at the Institute have shown that oxidised Assam coals which are acidic and contain high percentage of sulphur can be economically used for the large scale reclamation of alkaline soil, besides contributing to the supply of humus which is required by soil. This method is cheaper than the conventional methods of reclamation of alkaline soil such as application of gypsum, sulphur and ferrous sulphate.

Central Drug Research Institute,
Lucknow

Pharmacological Studies on Makaradhwaja—Makaradhwaja, a well known ayurvedic preparation, has been found to inhibit the succinic oxidase of rat liver homogenates. The action of the drug is probably due to the influence of mercury ions on the -SH groups of the enzyme. The drug also inhibits spontaneous oxidation of ascorbic acid in solution. The cytochrome oxidase is unaffected.

The observations indicate some *in vitro* solubility of the drug which is not revealed by ordinary chemical methods.

Sponsored Research

Sodium Carboxymethyl Cellulose—Conditions for the preparation of sodium carboxymethyl cellulose—an important cellulose ether—have been standardised and the process given a few pilot plant trials to work out the cost of production of the chemical. The process has been leased out to a private firm for commercial development.

The process (Indian Pat. No. 62751) consists in suspending pulverised cellulose in ethyl alcohol and reacting it with caustic soda and chloroacetic acid, centrifuging the reacted mass, washing with

alcohol and neutralising with sodium bicarbonate in alcohol suspension. The mass is then recentrifuged, dried and powdered in a hammer mill.

The product obtained by the process is uniform and amenable to precise control. The method adopted avoids the use of costly equipment unlike conventional methods—V. B. CHIPALKATTI & C. D. DHARIYAL, Shri Ram Institute for Industrial Research, Delhi.

Low Head Centrifugal Pumps—Commercially available pumps are not economical for use for irrigation purposes where a high discharge is required and a high head is unnecessary. An axial flow pump is also not suitable for the purpose as it requires a high capacity motor and heavy foundation.

Hence, investigations were undertaken on design and construction of a centrifugal pump which is capable of giving high discharge against low heads consuming reasonable amount of power. They resulted in the development of a

pump (3 in. diam.) which gives a discharge of 569 g.p.m. when run on 6.55 h.p. with an efficiency of 63.2 per cent against a delivery head of 4.16 ft.

The salient features of the pump design are: (1) use of half vanes in addition to full vanes to overcome the effects of circulatory flow; (2) volute chamber design based on forced vortex principle; (3) outlet angle less than the inlet angle to prevent shock losses; and (4) special arrangements to prevent leakage from the impeller—N. S. GOVINDA RAO & H. C. RADHA KRISHNA, Civil and Hydraulic Engineering Section, Indian Institute of Science, Bangalore.

Research Papers

BHELA OIL—J. S. Aggarwal, RRL, Hyderabad. *J. Oil Colour Chem. Assoc. (Lond.)*, 41 (1958), 684.

COMBUSTION OF COAL—A GENERAL DISCUSSION—S. Gopal Rao, S. K. Das Gupta, A. K. Das Gupta & A. Lahiri, CFRI, Jealgora. *J. Instn. Engrs (India)*, 39 (1958), 65-70.



Dr. Rajendra Prasad, President of India, conferring the award of Padma Shri on Dr. B. R. Nijhawan, Director, NML, Jamshedpur.

*DR. C. R. KRISHNA MURTI, Senior Scientific Officer, CDRI, Lucknow, who had been to U.K. for higher studies on *Enzymology* under the Colombo Plan, has resumed duty. He worked at University College, London; National Institute of Medical Research, London; and Atomic Research Establishment, Harwell.

*DR. S. K. MUKHERJI, Senior Scientific Officer, CDRI, Lucknow, resumed duty after completion of his studies under the Colombo Plan at Canada. He worked on *Experimental diabetes* at Banting Best Institute for Medical Research, Toronto.

*SHRI B. M. BISHUI, Senior Scientific Officer, CGCRI, Calcutta, who had been to U.K. for higher training at Berkbeck College, London and Macauley Institute for Soil Research, Aberdeen, Scotland, under Colombo Plan, resumed duty on Aug. 31, 1958.

*DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been nominated a member of the *Standing Advisory Committee for Large Scale Industries for Andhra Pradesh* constituted by the Government of Andhra Pradesh.

*SHRI PREM PRAKASH, Asst. Director, NPL, New Delhi, has been nominated CSIR representative on the *Development Council for Bicycles, Sewing Machines and Instruments*, Union Ministry of Commerce and Industry.

*DR. R. L. THAKUR, Senior Scientific Officer, CGCRI, Calcutta, has been elected member of the *Institute of Information Scientists*, U.K.

*SHRI C. R. GUPTA, Project Engineer, NPL, New Delhi, has been awarded Associate Membership of the *Institution of Engineers (Mechanical & Electrical)*, India.

*SHRI Y. N. TREHAN, Junior Scientific Officer, NML, Jamshedpur, has been awarded the Ph.D. degree by the Panjab University for his thesis, *Crystal Growth in Solid-Gas Reactions*.

PATENTS & PROCESSES

Applications Filed

India

65138: *Improvements in or relating to the manufacture of garlic powder*—J. S. Pruthi, G. Lal & V. Subrahmanyam, CFTRI, Mysore.

65282: *Improvements in or relating to crease and shrink proofing of cellulosic textiles*—V. B. Chippalkatti, K. V. Ramalingam, N. B. Sattur & E. Syamalarao, Shri Ram Institute for Industrial Research, Delhi.

65283: *A process for the preparation of palatable yeast hydrolysate powder from distillery sludge*—M. K. Rastogi & S. C. Agarwala, CDRI, Lucknow.

U.S.A.

755887: *Preparation of costus root oil and the products thereof*—G. R. Kelkar & S. C. Bhattacharyya, NCL, Poona.

Applications Accepted

India

59713: *Production of pure manganese sulphate and high grade iron oxide from low grade manganese ores*—T. R. Venkatasubramanian & V. Aravamuthan, CECRI, Karaikudi.

60828: *Manufacture of artificial porcelain teeth*—Atma Ram, N. V. Raghunath & S. K. Chakravarty, CGCRI, Calcutta.

60863: *Manufacture of 1-ethoxy-2-hydroxy-4-propenyl benzene*—S. Mehboob, V. D. N. Sastri, K. Ramachandran & S. H. Zaheer, RRL, Hyderabad.

62261: *A temperature sensitive ceramic composition having medium permittivity and retracable characteristics*—T. V. Ramamurti, C. V. Ganapathy, R. Krishnan, A. Ahmad & K. Vaitheswaran, NPL, New Delhi.

63719: *A process for the production of alkyl eugenols*—S. Mahboob, C. C. Reddy & S. H. Zaheer, RRL, Hyderabad.

U.K.

5374: *Improvements in or relating to the removal of organic sulphur from industrial gases*—N. G. Basak, A. C. Mazumdar & A. Lahiri, CFRI, Jealgora.

11349/56: *A process for the preparation of new desiccants and dehumidifiers*—R. P. Puri, B. K. Sarin & A. Lahiri, CFRI, Jealgora.

Applications Sealed

57937: *Improvements in or relating to the manufacture of aero-foils*—P. Nilakantan, Technical Centre (Directorate of Civil Aviation) New Delhi.

58909: *New foaming agents for production of foamed concrete*—G. W. Kapse & S. K. Chopra, CBRI, Roorkee.

59457: *A new process for preparation of fine dusts or wettable powders of insecticides such as DDT*—Dr. (Miss) S. B. Kulkarni, P. S. Kolhatkar, A. B. Biswas, K. V. N. Rao & M. V. Kuber, NCL, Poona.

Process Ready for Exploitation

LIGHT MAGNESIUM CARBONATE, which is widely used in rubber industry and in the manufacture of cigarette and other high quality papers, has been produced from sea-bitterns by a new process developed at the Central Salt Research Institute, Bhavnagar. The process has been worked out on a semi-pilot plant scale with 80 per cent conversion efficiency. The present requirement of the chemical by these industries is largely met from imports.

The process (covered by Indian Pat. No. 58528) consists in precipitating magnesium carbonate from sea-bitterns solution by treating the later with sambhar bitterns solution, filtering, washing and drying the product before pulverising. Alternatively, soda ash can also be used in place of sambhar bitterns.

The equipment required is simple. A plant having a capacity of 1 ton/day is estimated to cost about Rs. 2.5 lakhs.

Parties desirous of undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation, Mandi House, New Delhi.



CSIR

news

A Fortnightly News Bulletin

NEW DELHI—VOL. 8, NO. 22, NOV. 22, 1958
AGRAHAYANA 1, 1880

MEETINGS

A meeting of the *Metals Research Committee* will be held at the CSIR Secretariat, New Delhi, on Nov. 27, 1958 at 3.00 p.m. Shri J. J. Ghandy will preside.

A meeting of the *Essential Oils Research Committee* will be held at the National Chemical Laboratory, Poona, on Dec. 1, 1958 at 10.00 a.m. Shri P. A. Narielwala will preside.

Personal

*SHRI KAMLESH RAY has been appointed Assistant Director-in-charge, National Register Unit, CSIR, with effect from June 28, 1958. He joined the CSIR in February 1957 as Officer-on-Special Duty, Scientific Personnel Committee.

Shri Ray (b. July 12, 1914), obtained his MSc. degree in Physics from the Calcutta University (1937) and was engaged in research for sometime. In 1945, he left for U.S.A. under the Ghosh Travelling Fellowship, where he obtained B.S. and M.S. degrees in Civil Engineering from the California Institute of Technology and the University of Colorado respectively. On his return to India, he was appointed (1949) Executive Engineer, Damodar Valley Corporation, where he was in charge of research, testing and quality control for the construction of dams.

Shri Ray has published a number of research papers in the fields of physics and engineering. His other publications cover varied

fields including technical manpower, education and planning. He is a co-author (with late Prof. M. N. Saha) of the Integrated Planning for the Damodar Valley (1943-44) and a collaborating editor of *Science & Culture*. Shri Ray has published a number of articles and two books in Bengali for popularising science and is a recipient of scientific literary prizes.

*DR. K. A. KINI has been appointed, on promotion, Senior Scientific Officer: Grade I, CFRI, Jealgora, with effect from Sept. 12, 1958.

*SHRI T. N. BASU has been appointed, on promotion, Senior Scientific Officer: Grade I, CFRI, Jealgora, with effect from Sept. 12, 1958.

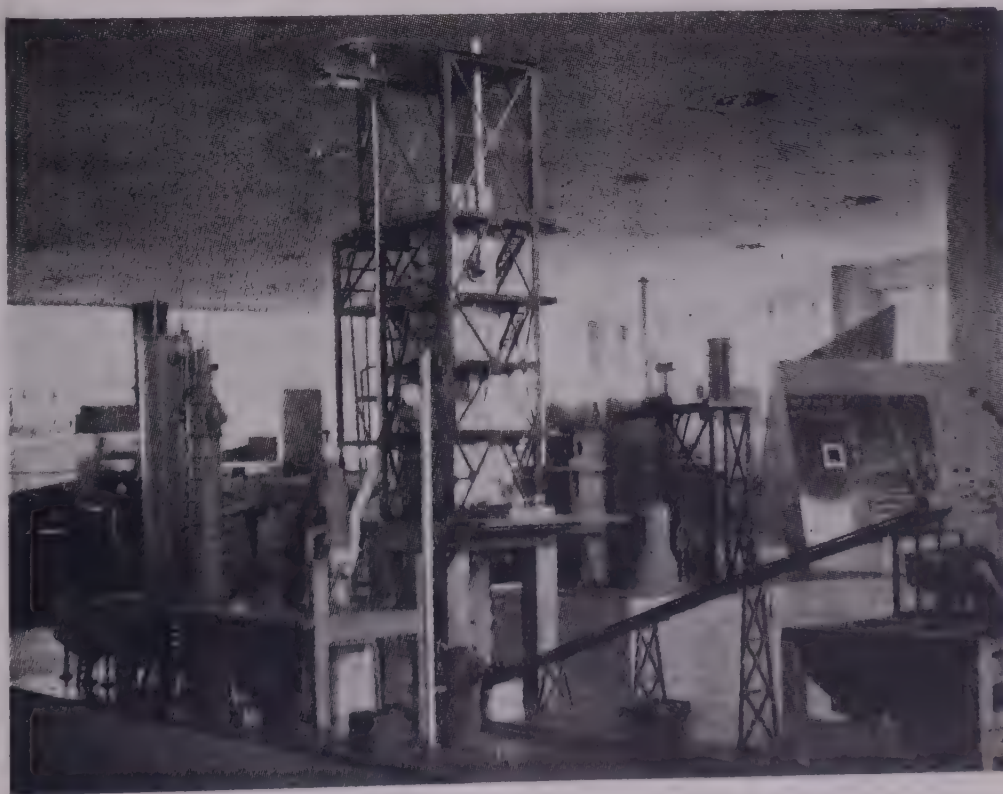
*SHRI G. G. SARKAR has been appointed, on promotion, Senior Scientific Officer: Grade I, CFRI, Jealgora, with effect from Sept. 12, 1958.

*DR. M. RAMACHARYULU has been appointed, on promotion, Senior Scientific Officer: Grade II, RRL, Hyderabad, with effect from Oct. 4, 1958.

*SHRI L. R. CHADHA has been appointed, on promotion, Senior Scientific Officer: Grade II, CRRI, New Delhi, with effect from Aug. 20, 1958.

*SHRI Y. R. PHULL has been appointed Senior Scientific Officer: Grade II, CRRI, New Delhi, with effect from Sept. 13, 1958.

(Contd. on p. 4, col. 1)



SCIENCE PAVILION, 'INDIA 1958' EXHIBITION A view of the model of low temperature carbonisation plant (25 ton per day capacity) installed at the RRL, Hyderabad

BRIEFS

New Members of Research Committees

The following have been nominated members of the CSIR Research Committees noted against their names:

1. PROF. M. C. NATH, Professor of Biochemistry, University of Nagpur—Chemical Research Committee.

2. MAJ. GEN. R. E. ASERAPPA, Engineer-in-chief, Army Headquarters, Ministry of Defence—Civil Engineering and Hydraulic Research Committee vice Brig. B. D. Kapur.

3. SHRI R. T. MIRCHANDANI, Agricultural Marketing Adviser, Union Ministry of Food & Agriculture—Essential Oils Research Committee.

4. DR. B. H. SINGH, Principal Scientific Officer (Air), Ministry of Defence—Radio Research Committee.

Research Fellowships

The following have been awarded CSIR Fellowships for research in schemes noted against their names:

Senior Fellowship:

1. SHRI MIHIR SEN GUPTA—Investigation on the application of new distribution formula to problems of strong electrolytes in solution and colloidal systems (University College of Science, Calcutta).

2. SHRI O. P. BANSAL—Study of clay mineralogy and stabilization of Indian soils in the aspect of soil mechanics (Agra College, Agra).

Junior Fellowship:

1. SHRI RAMESH CHANDRA SRIVASTAVA—Non-linear problems in thermodynamics of irreversible processes (Lucknow University, Lucknow).

2. SMT. ARATI SARKAR—Genetical and biochemical studies of induced mutants of *Aspergillus niger* (Bose Institute, Calcutta).

3. SHRI P. C. PUROHIT—Synthesis of silicon analogues of terpene and polycyclic hydrocarbons (Department of Chemical Technology, Bombay).

4. SHRI P. L. SAWANT—Preservation of fish (Institute of Science, Bombay).

5. SHRI V. S. PATIL—Preservation of fish (Institute of Science, Bombay).

6. SHRI SANTOSH KUMAR SRIVASTAVA—Metabolism of oxalic acid in plants and animals (Chemistry Department, Lucknow University Lucknow).

The following have been awarded CSIR fellowship for research

at the RRL, Hyderabad, in the subjects noted against their names.

1. DR. (MRS.) AZIZ MIRZA—Study of the mechanism and kinetics of hydrogenation and hydro-refining of low temperature tar fractions (Senior).

2. SHRI M. JANARDANA RAO—Studies on cracking of tars (Junior).

3. KUMARI A. BHARAMARAMBA—Studies on cinnamon leaf oil (Junior).

PATENTS & PROCESSES

Applications Filed

65230: Improvements in or relating to hot-dip aluminising steel—S. M. Arora, P. K. Gupte & B. R. Nijhawan, NML, Jamshedpur.

65231: An improved method for the production of chromium-manganese alloys by aluminothermic reaction—R. A. Sharma & P. P. Bhatnagar, NML, Jamshedpur.

65440: A process for the extraction of wax from sisal waste—S. M. Shah, V. K. Hinge, V. V. Mhaskar & R. C. Shah, NCL, Poona.

Applications Accepted

60827: Isolation of a therapeutically active antibiotic and antiviral principle from *Withania somnifera* (Solanaceae)—P. A. Kurup, CDRI, Lucknow.

60865: Improvements in or relating to the electrolytic reduction of m-dinitrobenzene to 2:4 diaminophenol—G. S. Subramanian, H. V. Udupa & B. B. Dey, CECRI, Karaikudi.

63289: Improvements in or relating to vats for making hand-made paper—G. S. Chowdhury, M. K. Chary, S. A. Saletore & S. H. Zaheer, RRL, Hyderabad.

PROCESS READY FOR EXPLOITATION

MULLITE REFRACTORIES

The National Metallurgical Laboratory has developed a process (Indian Pat. No. 58553) for producing high temperature hot-face insulation and dense refractories (mullite content 90 and 60-85 per

cent respectively) from coarse bladed kyanite which has no market value at present and is available in abundance in India. This type of refractories is not manufactured in the country.

The hot-face insulation refractory produced by this process has refractoriness-under-load comparable to that of the imported alumina insulation refractory and has low shrinkage even at 1550°C. The dense refractory has porosity varying from seven to zero per cent and refractoriness-under-load higher than 1560°C. Both the varieties have adequate crushing strengths and other load-bearing properties.

Hot-face insulation refractories are easy to cut and dress and are rapidly replacing dense refractory linings in heat treatment furnaces. Dense refractories (with high mullite content) find use as linings for melting furnaces, particularly glass tank furnaces.

The traditional machinery required for making ceramics can be used for manufacturing both types of refractories except for kilns which have to be designed to attain temperature ranges of 1550-1600°C. A plant of 6,000 tons annual capacity (3,000 tons each of hot-face insulation and dense refractories) is expected to cost Rs. 11 lakhs.

Parties desirous of undertaking the commercial development of the process may write to the Secretary, National Research Development Corporation of India, Mandi House, New Delhi.

RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory,
Jamshedpur

'Thackeron' Stainless Steel—Commercial scale production of 'Thackeron' nickel-free stainless steel (CSIR News, Vol. 7, No. 23, p. 3) has proved successful. An ingot of the steel weighing about 2 tons (representing a full scale industrial ingot) has been produced. The starting materials (electrolytic manganese, nitrided chromium-manganese alloy, etc.) have all been prepared from indigenously available ores.

National Botanic Gardens,
Lucknow

Reclamation of Alkaline Soil—Field experiments on reclamation of highly alkaline *usar* lands by means of ferrous sulphate, gypsum, etc. have shown that certain resistant types of algae are extremely helpful in reducing the pH (from 8.8 to 7.3) within a short period. The process is fairly rapid during the monsoon season but is slowed down with the approach of winter. Systematic experiments in the Laboratory have confirmed these findings and further experiments with various types of algae are in progress.

Sponsored Research

Ovulation of Frogs by Mammalian Hormones—The effect of mammalian hormones in inducing ovulation in Indian skipper frog, *Rana cyanophlyctis* Schn., has been studied. Progesterone and methyltestosterone bring about ovulation in the skipper frog but other hormones like follicle-stimulating hormone, luteinizing hormone, chorionic gonadotrophin, pregnant mare serum, thyroid stimulating hormone, growth hormone, adrenomone and desoxycorticosterone acetate are ineffective. However, when these hormones are used in combination with a threshold dose of frog pituitary glands, the frogs spawn and yield viable eggs hatching into tadpoles.

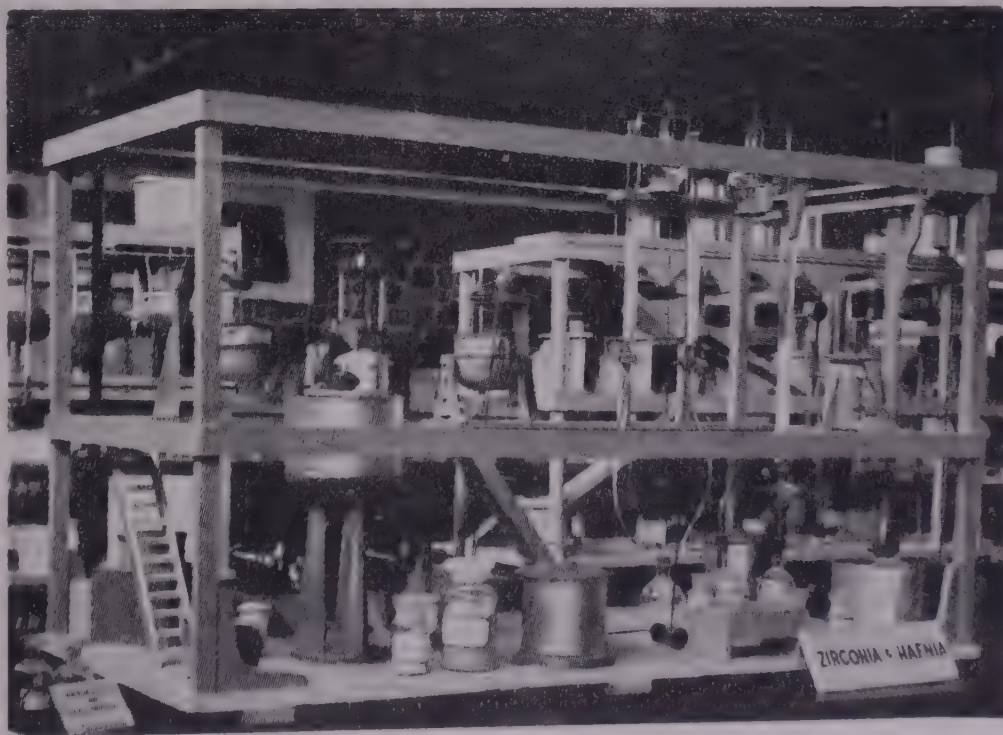
Oxytocin, even in combination with a threshold dose of frog pituitary glands, appears to have no effect on the frog ovary. Pregnant mare serum, which is largely follicle-stimulating hormone, acts as a synergic agent and causes spawning. Growth- and thyroid-stimulating hormones (which are totally unconnected with ovulation) also appear to act as synergic agents in combination with the pituitary glands of the skipper frog—L. S. RAMASWAMI, Central College, Bangalore.

Nature and Origin of Atmospherics—Investigations on the collection of data on atmospherics, recording of wave-forms of atmospherics on different narrow band frequencies and locating their sources were carried out at the University of Poona. The various electronic units and the automatic photographic recording devices for the investigation were designed and fabricated.

The data on atmospherics were collected at frequency bands, 85, 125, 175, and 455 kc/s. The rates of reception of atmospherics on the four bands were recorded at the end of each hour round the clock

while their intensities were recorded photographically only once at 22.00 hr. I.S.T. Intensity of atmospherics on the 85 kc/s. band was recorded continuously by a pen recorder. The wave-form records were taken once for a few minutes at 21.00 hr. I.S.T. For the location of sources of atmospherics, two instantaneous direction finders with photographic recorders were installed at Poona and Sangli separated by a distance of about 120 miles apart. They were worked simultaneously for two minutes at four fixed hours every day.

The statistical analysis of the data has brought out the diurnal and seasonal variations in the X-activity at both the stations. At Poona, 125 kc/s. band shows maximum activity. The study of the directional distribution of sources of atmospherics has brought out the geographical peculiarities of the two stations. The wave-form study has led to the determination of the distances of the sources of atmospherics, their variations with the the season and height and reflection coefficients of the ionosphere—M.W. CHIPLONKAR, Physics Department, University of Poona, Poona.



SCIENCE PAVILION, 'INDIA 1958' EXHIBITION—A unit for production of reactor grade zirconia and high purity hafnia from Indian zircon—NCL, Poona

PERSONAL

(Contd. from p. 1, col. 3)

*SHRI K. S. SANKARAN has been appointed, on promotion, Senior Scientific Officer: Grade II, CRRI, New Delhi, with effect from Aug. 20, 1958.

*SHRI R. N. DEVA has been appointed, on promotion, Junior Scientific Officer, CRRI, New Delhi, with effect from June 25, 1958.

*SHRI N. V. RAGHAVAN has been appointed Junior Scientific Officer, CRRI, New Delhi, with effect from Sept. 5, 1958.

*SHRI O. P. WASAN has been appointed Junior Scientific Officer, CRRI, New Delhi, with effect from Aug. 28, 1958.

*SHRI V. A. KRISHNAMURTHY has been appointed Junior Scientific Officer, CFRI, Jealgora, with effect from July 1, 1958.

*SHRI D. K. BHATTACHARJEE has been appointed Junior Scientific Officer, CFRI, Jealgora, with effect from July 2, 1958.

*SHRI A. K. DUTTA has been appointed Junior Scientific Officer, CFRI, Jealgora, with effect from July 17, 1958.

*SHRI P. M. VERMA, Senior Scientific Assistant, CFRI, Jealgora, has been appointed on promotion, Junior Scientific Officer, CRRI, New Delhi, with effect from Sept. 15, 1958.

*SHRI A. GONSALVES has been appointed, on promotion, Section Officer: Grade III, CECRI, Karaikudi, with effect from Sept. 19, 1958.

*SHRI S. SAMPATH, Junior Scientific Officer, CECRI, Karaikudi, has left for U.K. on Oct. 15, 1958 for training in *Technology of Fluorine and its Compounds*, under the Colombo Plan.

*PROF. S. R. MEHRA, Director, CRRI, New Delhi, has been nominated a member of the *Engineering Division Council, Indian Standards Institution*.

*SHRI V. CADAMBE, Director (Planning), Central Mechanical Engineering Research Institute

has been nominated a member of the *Engineering Division Council, Indian Standards Institution*.

*DR. B. R. NIJHAWAN, Director, NML, Jamshedpur, has been nominated a member of the Advisory Committee for the *Department of Metallurgical Engineering, Indian Institute of Technology, Kharagpur*.

*SHRI J. C. BANERJEE, Asstt. Director, CGCRI, Calcutta, has been nominated a member of the *Refractories Panel, Union Ministry of Commerce & Industry*.

*DR. D. S. BHATIA, Asstt. Director, CFTRI, Mysore, has been nominated a member of the *Tuber Crops Committee, Indian Council of Agricultural Research*.

*SHRI U. N. TANDON, Senior Scientific Assistant, Indian National Committee for the IGY, NPL, New Delhi, has been awarded the D. Phil. degree by the University of Delhi for his thesis, *Some Problems in Astrophysics*.

*SHRI A. V. RAJESWARE RAO, Senior Scientific Assistant, RRL, Hyderabad, has been awarded the Ph.D. degree by the Osmania University for his thesis, *Study of Mineral Constituents of Hyderabad Clays by Differential Thermal Analysis and Other Methods*.

*SHRI BHAGAT RAM SHARMA, Ex-Research Assistant, CSIR scheme (Department of Chemistry, University of Delhi), has been awarded the Ph.D. degree by the Panjab University for his thesis, *Studies in Cycloheptane Series*.

NEW PUBLICATIONS

INDIAN CLAYS—THEIR OCCURRENCE & CHARACTERISTICS : PART I

A monograph giving information in respect of location, availability, physical properties and possible ceramic uses of some 500 clay samples.

Pp. 156, Demy 4to

Price : Rs. 8.00

ANTIBIOTICS—THEIR PRODUCTION, UTILIZATION AND MODE OF ACTION

Proceedings of a symposium organised by the Biochemical and Pharmaceuticals and Drugs Research Committees of CSIR and held at the Hindustan Antibiotics (Private) Ltd., Pimpri. Contains 65 papers.

Pp. 292+xxvi, Royal 8vo

Price : Rs. 15.00

ESSENTIAL OILS AND AROMATIC CHEMICALS

Proceedings of a symposium held at Dehra Dun under the joint auspices of the CSIR Essential Oils Research Committee and the Forest Research Institute & Colleges. Contains 70 papers on different aspects of the essential oils industry.

Pp. 174+xx, Royal 8vo

Price: Rs. 10.00

INVESTIGATIONS ON THE COMPOSITION AND NUTRITIVE VALUE OF VANASPATI—Vol. II

A collected account of the researches sponsored (1952-57) by the CSIR Vanaspati Research Advisory Committee.

Pp. 80+iv, Royal 8vo

Price : Rs. 5.00

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CSIR

news

A Fortnightly News Bulletin

NEW DELHI—VOL. 8, NO. 23, DEC. 13, 1958
AGRAHAYANA 22, 1880

Dr. Krishnan Felicitated on Sixtieth Birthday

To felicitate Dr. K. S. Krishnan, F.R.S. on his sixtieth birthday, a function was organised by the members of the staff of the NPL on Dec. 9, 1958. Shri Lal Bahadur Shastri, Minister for Commerce & Industry presided.

The Prime Minister Shri Jawaharlal Nehru was present on the occasion. Prof. M. S. Thacker, Dr. H. J. Bhabha and Dr. D. S. Kothari were among the distinguished scientists who participated in the function.

Dr. K. N. Mathur offered felicitations to Dr. Krishnan on behalf of the staff of the NPL and presented an address.

The Prime Minister presented to Dr. Krishnan, a special number of the *Journal of Scientific & Industrial Research* containing articles on the work carried out under the auspices of the Indian National Committee for the I.G.Y., of which Dr. Krishnan is the President. The Prime Minister in a brief speech referred to Dr. Krishnan as "a dear friend and colleague, a great scientist and scholar who has not lost that gentleness and humour which are the true marks of greatness".

Prof. M. S. Thacker unveiled a portrait of Dr. K. S. Krishnan, executed by the artist Shri K. S. Kulkarni. Speaking on the occasion, Prof. Thacker referred to his personal association with Dr. Krishnan and said that he greatly valued his cooperation. Dr. H. J. Bhabha praised Dr. Krishnan's "devotion to work, his integrity and selflessness".



NPL, NEW DELHI—Dr. K. S. Krishnan, Director, replying to the felicitations offered to him on his sixtieth birthday

MEETINGS

A meeting of the *Civil Engineering & Hydraulic Research Committee* will be held at the Roorkee University, Roorkee, on Dec. 27, 1958 at 11.00 a.m. Shri A. N. Khosla will preside.

A meeting of the *Biological Research Committee* will be held in the Conference Room, CSIR Secretariat, New Delhi, on Jan. 3, 1959 at 10.30 a.m. Prof P. Maheshwari will preside.

A meeting of the *Pharmaceuticals & Drugs Research Committee* will be held in the Conference Room, CSIR Secretariat, New Delhi, on Jan. 23, 1959 at 10.00 a.m. Maj. Gen. S. S. Sokhey will preside.

Personal

*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been appointed a member of the Board of Directors of the *Hindustan Aircraft (P.) Ltd.*, Bangalore.

*PROF. M. S. THACKER has been nominated a member of the *Central Advisory Board of Education* for a period of three years.

*SHRI M. V. JOSHI has been appointed, on promotion, Senior Scientific Officer, Grade I, NPL, New Delhi, with effect from Oct. 18, 1958.

(Contd on p. 4, col. 1)

B R I E F S

Chemotherapy in Bacterial & Viral Infections

A symposium on Chemotherapy in Bacterial & Viral Infections was held at the Central Drug Research Institute, Lucknow from Nov. 2-4, 1958. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, inaugurated the symposium. The symposium was attended by a large number of delegates and representatives of some of the leading pharmaceutical and drug establishments in India.

Dr. B. Mukerji, Director, CDRI, while welcoming the delegates, laid stress on the importance of chemotherapy in infectious diseases and added that chemotherapy being a hybrid discipline covering many border sciences, the scope of the symposium has been broadened to cover protozoal and metazoal infections also.

Forty-four papers on the chemotherapy of (1) bacterial, (2) viral, (3) protozoal and (4) other infections were presented and discussed in the course of four sessions presided over by Dr. V. R. Khanolkar, Director, Indian Cancer Research Centre, Bombay; Col. S. S. Bhatnagar, Hon. Professor of Microbiology, St. Xavier's College, Bombay; Dr. F. Hawking, Colombo Plan Expert at the Central Drug Research Institute; and Dr. B. B. Bhatia, Head of the Department of Medicine, K. G. Medical College, Lucknow.

Discussion on the different papers centred round the chemotherapeutic aspects of tuberculosis, cancer and viral diseases; technique of testing compounds in diseases like filariasis, malaria, amoebic and bacillary dysentery and ascariasis; and the development and uses of antibiotics.

Prime Minister Visits CBRI

Shri Jawaharlal Nehru, Prime Minister, accompanied by Shri V. V. Giri, Governor of U.P. and Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, visited the Central Building Research Institute, Roorkee, on Nov. 25, 1958. They were taken

round the Institute by Lieut. Gen. H. Williams, Director, and explained some of the completed researches and the problems under investigation. Later, the Prime Minister addressed the staff of the Institute.

Research Fellowships

The following have been awarded CSIR Fellowships for research in schemes noted against their names:

Senior Fellowship:

1. SHRI S. B. GHOSH — Isolation in pure state of organic compounds (Bose Institute, Calcutta).
2. SHRI G. V. SREEKANTIAH — Geotechnical properties of black cotton soils, etc. (Indian Institute of Technology, Kharagpur).
3. SHRI J. K. MAHENDRA — Development of pentaerythritol from alcohol and formaldehyde (Shri Ram Institute for Industrial Research, Delhi).
4. SHRI S. RAMANUJAM — Pilot plant manufacture of polyvinyl acetate from alcohol (Shri Ram Institute for Industrial Research, Delhi).
5. SHRI R. GANESAN — Photo sensitized polymerization (University of Madras, Madras).
6. SHRI S. VENKATARAMANI — Investigation on interaction between structural steel and concrete in steel framed structures with encased beams (Indian Institute of Technology, Kharagpur).
7. SHRI S. M. KHOPKAR — Separation of heavy metals by ion exchange (Jadavpur University, Calcutta).

8. SHRI M. K. PAUL — Comparative studies of the electrolytes of protein, etc. (Institute of Child Health, Calcutta).

Junior Fellowship:

1. SHRI B. B. CHAUDHURI — Development of pulse-velocity method for testing concrete (Bengal Engineering College, Howrah).
2. SHRI GIRJESH GOVIL — Utilization of lignin and lignocellulosic wastes (Forest Research Institute, Dehra Dun).

3. SHRI BEJOY KUMAR — Separation of heavy metals by ion-exchange (Jadavpur University, Calcutta).

4. SHRI C. D. ANAND — Preparation of $\beta\beta'$ dichloro-diethyl ether (Shri Ram Institute for Industrial Research, Delhi).

5. SHRI M. R. GOPALAN — Kinetics of polymerisation (University of Madras, Madras).

6. SHRI S. B. KARKI — Fixing suitable specifications for assessing the suitability of different soils for brick burning (Field Research Station, Bombay).

7. KUMARI PRAMILA B. PANDIT — Fundamental study of the interaction between soils and well known stabilizers such as calcium chloride (Field Research Station, Bombay).

8. SHRI K. M. S. SAXENA — Pollen analysis of quaternary deposits of Kashmir (Birbal Sahni Institute of Palaeobotany, Lucknow).

9. SHRI W. K. BEHL — Electrochemical investigations in fused salt media (Delhi University, Delhi).

10. SHRI A. K. CHANDRA — Mech., ano-chemical properties of polymer analogous to muscle proteins (University College of Science and Technology, Calcutta).

11. SHRI V. S. JATKAR — Chemical physics (Poona University, Poona).

Research Papers

THE EFFECT OF DIETARY FAT ON THE FATTY ACID COMPOSITION OF CHOLESTEROL ESTERS IN RAT LIVER — S. Mukerjee, K. T. Achaya, H. J. Deuel, Jr. & R. B. Alfin-Slater, RRL, Hyderabad. *J. Nutr.*, **65** (1958), 469.

SIMULTANEOUS DETERMINATION OF COPPER, ALUMINIUM AND MAGNESIUM IN ZINC ALLOYS FOR DIE-CASTING BY POROUS CUP-SPARK TECHNIQUES — B. C. Kar, M. K. Gupte & V. Muthukrishnan, NML, Jamshedpur. *Trans. Indian Inst. Metals*, **2** (1958), 3-11.

A STUDY ON THE REMOVAL OF WATER FROM WET COAL BY NATURAL DRAINAGE — A. K. Chakravarti, G. G. Sarkar & A. Lahiri, CFRI, Jealgora. *Indian Min. J.*, **6**(7) (1958), 1-10.

RESEARCH IN PROGRESS

National Laboratories

Central Building Research
Institute, Roorkee

Soil Testing for Assam Refinery Building—The Institute has undertaken, on request, a study of the load bearing capacity of the soil on a site of about 50 acres in area at Kokrajhar for constructing a building for the oil refinery which is to be set up in Assam. Undisturbed soil samples up to a depth of 120 ft. for deep bores and a depth of 40 ft. for shallow bores have been obtained after every 5 ft. They are being tested for index properties, compressibility, shear strength and other tests.

Regional Research Laboratory,
Jammu

Dioscorea deltoidea—Tubers of *D. deltoidea* Wall grown in the Kulu valley (Panjab) and Bhadrawah area (Jammu Hills) contain as high as 6-8 per cent of diosgenin compared to the tubers grown in other regions which contain only 4 per cent. This has been revealed on a recent survey carried out in these areas. An economic process for the extraction of diosgenin from the tubers has been worked out.

Sponsored Research

Plasticity of Clay and its other Physical and Chemical Properties—In the absence of a standard method for determination of the plasticity of clays, the feel-by-hand method has been in use. In addition, for comparing plasticity, research workers depend on various measurements such as, water of plasticity, sedimentation volume, workability, Atterberg's plasticity number, viscosity, etc.

A comparison of the values obtained from these determinations has shown that all the methods except Atterberg's plasticity index (ASTM D 423-39 and D 424-39) give incorrect results. Besides, plasticity of clay is governed by its specific surface and to some extent

by particle size distribution and mineralogical distribution — D. LAHIRI & GURUDAS MANDAL, University College of Science & Technology, Calcutta.

Pressure Leaching of Chalcopyrite—Extraction of copper from chalcopyrite concentrate by leaching it with water and blowing oxygen at moderate pressure and temperature has been investigated. The concentrate (assaying Cu, 23.5; Fe, 29.5; and S, 25.9 per cent) was obtained from the Indian Copper Corporation, Ghatsila and the sample having particle size from -60 to +200 mesh used for investigation.

A slurry of the concentrate in water and liquor ammonia was autoclaved in an electrically heated stainless steel autoclave at four different sets of temperatures and pressures (150°C. and 150 psig., 150°C. and 200 psig., 150°C. and 250 psig., and 125°C. and 200 psig.) and the filtrate obtained containing all the copper in solution, was estimated for its copper content. The maximum yield (70 per cent) of copper was obtained under conditions of 150°C. and

250 psig. — T. K. Roy, M. K. Bose & R. N. BAGCHI, College of Engineering & Technology, Calcutta.

Chemical Investigations of *Mundulea suberosa* Benth.—The active principles of root-bark of *M. suberosa* Benth.—a widely distributed plant in South India—were isolated, characterised and tested for their insecticidal properties.

Two yellow coloured active principles, one toxic to fish (yield, 0.01 per cent) and other non-toxic (yield, 0.015 per cent), were isolated. Their various physical and chemical properties were studied and molecular formulae established. The former, an unsaturated lactone, was found to be optically active and contained one methoxyl group; the latter contained one free hydroxyl group.

The compounds were tested by the Malaria Institute of India, Delhi. Both the compounds did not show any activity as adulticides against *Musca nebulosa* and as larvicides against *Culex fatigans*—N. V. SUBBA RAO, Chemistry Department, Osmania University, Hyderabad.



NPL, NEW DELHI—The valuable collection of scientific and technical books belonging to Late Dr. Shanti Swarup Bhatnagar was presented to the NPL by his son, Shri A. S. Bhatnagar, at a ceremony held at the Laboratory on Nov. 21, 1958. Picture shows Prof. Humayun Kabir, Minister for Scientific Research and Cultural Affairs (speaking) and (l-r) Shri P. M. Sundaram, Dr. K. S. Krishnan, Shri A. S. Bhatnagar and Dr. K. N. Mathur.

PERSONAL

(Contd from p. 1, col. 3)

*SHRI C. P. NATARAJAN has been appointed, on promotion, Senior Scientific Officer: Grade I, CFTRI, Mysore, with effect from Nov. 7, 1958.

*SHRI S. K. LAKSHMINARAYANA has been appointed, on promotion, Senior Scientific Officer: Grade I, CFTRI, Mysore, with effect from Nov. 7, 1958.

*The following have been appointed, on promotion, Senior Scientific Officers: Grade II, CFTRI, Mysore, with effect from Nov. 7, 1958: DR. S. S. KALBAG, DR. H. C. SRIVASTAVA, SHRI V. BALU and SHRI M. V. LAKSHMINARAYANA RAO.

*The following have been appointed on promotion, Junior Scientific Officers, CFTRI, Mysore, with effect from Nov. 7, 1958: SHRI S. KUPPUSWAMY, DR. L. V. L. SAS-TRY, DR. H. B. N. MURTHY, SHRI B. S. BHATIA, DR. M. NARAYANA RAO, SHRI M. MUTHU, DR. K. KRISHNA-MURTHY, SHRI V. SRINIVASAMURTHY and SHRI L. S. MANAVALAN.

*SHRI G. S. SRIVASTAVA has been appointed, on promotion, Junior Scientific Officer, NBG, Lucknow, with effect from Nov. 1, 1958.

* * *

*DR. A. LAHIRI, Director, CFRI, Jealgora, has been elected a Fellow of the Institute of Petroleum, U.K.

* * *

*DR. ATMA RAM, Director, CGCRI, Calcutta, has been nominated a member of the Reviewing Committee of the Indian Institute of Technology, Kharagpur.

*DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore, has been nominated a member of the Working Group on Subsidiary Foods, Ministry of Food and Agriculture, New Delhi.

*DR. S. A. SALETOR, Deputy Director, RRL, Hyderabad, has been nominated a member of the Sub-Committee to consider ways and means for dissemination of results of research of the Indian Central Oilseeds Committee, Hyderabad.

PATENTS & PROCESSES

Applications Filed

65646: Improvements in or relating to the production of manganese metal with special reference to the application of the low grade manganese ores—V. Aravamuthan & S. Gopal, CECRI, Karaikudi.

65696: A process to produce carbon pastes for use in the continuous soderberg electrodes of electric ferro-alloy furnaces and electrolytic cells used in the manufacture of metals like aluminium—P. Prabhakaram & H. P. Srinivasamurthy, NML, Jamshedpur.

65777: A new process for the production of 4-hydroxy-carbostyrils—V. R. Shah, J. L. Bose & R. C. Shah, NCL, Poona.

65778: Improvements in or relating to the production of trans-diethylstilbestrol dimethyl ether and allied stilbenes—C. G. Joshi, J. L. Bose & R. C. Shah, NCL, Poona.

65779: A process for the production of hydrogen sulphide from gypsum—Razia Osmani, D. S. Datar & S. H. Zaheer, RRL, Hyderabad.

65780: Improvements in or relating to evaporated metal coatings for optical elements—P. Hariharan, NPL, New Delhi.

Applications Sealed

58870: A process for the isolation of the cardio-active glycosides of Digitalis—M. M. Dhar, N. M. Khanna & M. L. Dhar, CDRI, Lucknow.

59265: An improved method for the isolation of psoralen-isopsoralen mixture from dried fruits of *Psoralea corylifolia* (Babchi)—C. Bhattacharji & M. L. Dhar, CDRI, Lucknow.

59456: Improvements in or relating to the manufacture of hot face insulating bricks and blocks—Atma Ram, J. C. Banerjee & P. K. Roy, CGCRI, Calcutta.

59608: Porous rigid filters—S. L. Kapur & R. N. Pandya, NCL, Poona.

59630: An improved process for making bricks from sticky clays—N. C. Majumdar & N. K. Patwardhan, CBRI, Roorkee.

Processes Ready for Exploitation

The following seven processes developed at the Central Leather Research Institute, Madras are ready for release free to the industry. The Indian Patent numbers of the processes are given in brackets: Manufacture of gold and silver leathers (55819); Preparation of synthetic tanning materials (52798); Preparation of synthetic tanning materials (52799); An improved process for the enzymic unhairing of skins and hides (50806); Enzymic unhairing of skins and hides (52013); A curing agent for raw hides and skins (56251); A new curing agent for wet salting of hides and skins (57886).

Parties interested in the commercial development of the processes may contact the Director, Central Leather Research Institute, Madras.

National Metallurgical Laboratory, Jamshedpur

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A Fortnightly News Bulletin

NEW DELHI—VOL. 8, NO. 24, DEC. 27, 1958
PAUSA 6, 1880

MEETINGS & SYMPOSIA

A meeting of the Geological & Mineralogical Research Committee will be held in the Conference Room of the CSIR Secretariat, New Delhi, on Jan. 20, 1959 at 10.30 a.m. Dr. D. N. Wadia, Geological Adviser, Department of Atomic Energy, New Delhi, will preside.

Electrolytic Cells

A symposium on Electrolytic Cells will be held at the Central Electrochemical Research Institute, Karaikudi, from Dec. 30, 1958 to Jan. 1, 1959. Shri C. Subramaniam, Minister for Finance & Education, Government of Madras and Chairman, Executive Council, CECRI, Karaikudi, has kindly consented to inaugurate the symposium.

The symposium will be held under the following sections:

- (1) Industrial electrolytes
- (2) Electrometallurgical processes
- (3) Recent advances in fundamental aspects of electrolytic cells
- (4) Miscellaneous applications.

Thirty-nine papers covering the above topics will be presented and discussed. Scientist delegates from U.S.A., U.S.S.R. and Japan and representatives of various research and industrial organisations in India are expected to participate in the symposium.

Nature of Coal

A symposium on The Nature of Coal will be held at the Central Fuel Research Institute, Jealgora, from Feb. 7 to Feb. 9, 1959. Prof. M. S. Thacker, Director-General, Scientific & Industrial Research, has kindly consented to preside.

The symposium will be held in the following six sessions:

- (1) Origin and systematics of coal
- (2) Petrographic and X-ray studies
- (3) Ultra-fine structure—Sorption of polar and non-polar liquids; heat of wetting; surface area; and solvent extraction
- (4) Coal constitution: Physical methods—Density; reflectance; infra-red and ultra-violet spectroscopy; and other methods
- (5) Coal constitution: Chemical methods—Oxidation; hydrogenation; hydrogenolysis; halogenation; sulphonation; functional groups; and pyrolysis
- (6) Physico-chemical properties—Electrical and magnetic properties; mechanical properties;

thermal properties; behaviour on heating; and reactivity

Thirty-five research papers received from scientists from India and the following foreign countries will be presented and discussed: Australia, Belgium, Canada, Czechoslovakia, Japan, U.K., New Zealand, U.S.S.R. and West Germany.

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*PROF. M. S. THACKER, Director-General, Scientific & Industrial Research, has been nominated a member of the Reviewing Committee, Indian Association for the Cultivation of Science, Calcutta.

*DR. K. S. KRISHNAN, Director, NPL, New Delhi, has been nominated a member of the Reviewing Committee, Indian Association for the Cultivation of Science, Calcutta.



CFTRI, MYSORE—A view of the Technology Block of the Institute declared open on Dec. 4, 1958 by Prof. M. S. Thacker, Director-General, Scientific & Industrial Research

B R I E F S

'Wealth of India' Awarded 1st Prize in State Competition, 1958

The Wealth of India: Industrial Products: Part IV (F-H) has been awarded the FIRST PRIZE (Category, Books on Indian-made Paper) in the annual competition for excellence in printing and designing. The competition was organised by the Union Ministry for Information and Broadcasting. The publication was printed by *Sree Saraswati Press, Calcutta*.

The Prime Minister, Shri Jawaharlal Nehru presented the awards to the winners in the competition at a ceremony held at Vigyan Bhavan, New Delhi, on Dec. 19, 1958.

Cottonseed and its By-products

The three-day symposium on Cottonseed and its By-products, organised by the *Regional Research Laboratory, Hyderabad*, ended on Dec. 7, 1958. Distinguished scientists and technologists from India and abroad participated in the symposium.

The papers were discussed under the following heads: (i) Agricultural and Compositional Study of Cottonseed; (ii) Processing, Storage and Keeping Quality; (iii) Solvent Extraction; (iv) Refining; (v) Hydrogenation; (vi) By-products; (vii) Fundamental Studies; and (viii) General Considerations.

The discussion in agricultural studies centred round Sea Island cotton recently introduced into the country and likely to influence linter production. Analysis of a large number of cottonseeds for proximate composition has been completed; they are of value in establishing a basis for the utilisation of cottonseeds.

The results presented in the papers on "Processing, Storage and Keeping Quality" were of direct interest to industry. It was pointed out that the efficiency of expellers had been greatly improved and cakes containing less than 3 per cent oil are now produced. Storage of cottonseed is a major problem as it influences colour fixation in the oil. Solvent extraction by the use of alcohol is a comparatively recent development,

Facsimile of the *Tamrapatra* (First Prize) awarded to 'Wealth of India' for excellence in printing & designing

and while it involves the use of high temperatures, slight pressure and a closed system, the greatly improved quality of oil and cake obtainable by its use is definitely an advantage and pilot plant studies on the economics of the alcohol process should be vigorously pursued.

Continuous refining of cottonseed oil was considered to be the only rational approach for obtaining oils of the required standard. The practice of washing oil with alkali, and especially the bleaching of crude oil, was deprecated. The chemical approach to gossypol removal, such as the use of borax, opened out great practical possibilities.

It was emphasised during the discussion on by-products of the cottonseed crushing industry that the utilisation of linters was hampered by the lack of cleaning equipment; also, the intrinsic differences between Indian and American linters required further study. It is necessary that Indian mills should try and produce second-cut linters demanded by the rayon industry.

The problems of foots disposal can be solved either by the installation of fat-splitting and distillation equipment or by the application of the urea technique. The latter deserved to be further

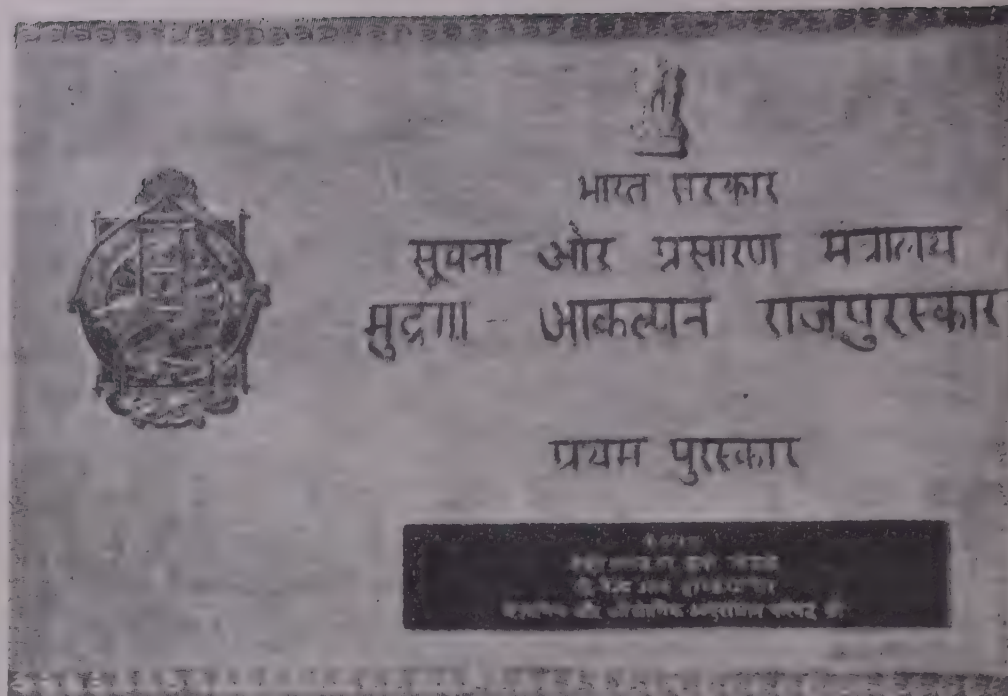
studied on a pilot plant scale, as its adoption would obviate the need for importing expensive equipment. The standardisation of products of the cottonseed industry was of fundamental importance for the development of the industry on sound lines.

IGY National Committee

IGY News-letter No. 15 issued on Dec. 9, 1958 records (i) the resolution adopted by the International Council of Scientific Unions in regard to the continuance of IGY up to December 1959 under the new name *International Geophysical Cooperation* 1959; (ii) formation of a special committee for Inter-Union Cooperation in Geophysics (SCG) and its functions, and (iii) the decision of the CSAGI (at its fifth meeting held in Moscow) to invite academies or representative groups in different countries to adhere to the *International Geophysical Cooperation* 1959.

Research Scheme Terminated

The research scheme, *Study of shear strength and consolidation characteristics of Indian cohesive soils* (investigator: Shri S. P. Gupta, Lecturer in Civil Engineering, University of Roorkee, Roorkee) has been terminated with effect from Nov. 30, 1958.



RESEARCH IN PROGRESS

National Laboratories

National Metallurgical Laboratory,
Jamshedpur

Concentration of Lead-Zinc Ore—Heavy media separation of a lead-zinc ore sample from Zawar (assaying Pb, 2.77; Zn, 5.35; CaO, 16.71; MgO, 10.73; SiO₂, 28.76; Fe, 2.54; Al₂O₃, 0.11; and S, 3.31 per cent) has been carried out using a continuous sink-and-float plant fabricated in the Laboratory. A float weighing 23.7 per cent (Zn, 1.63 per cent) is obtained at sp. gr. 2.75 with a loss of 7.4 per cent zinc and no less of lead. At sp. gr. 2.80, the float weighing 43.3 per cent (Zn, 2.17 and Pb, 0.02 per cent) is produced with a loss of 18.0 per cent zinc and 0.3 per cent lead.

Battery-Grade Manganese Dioxide—A chemical process for the production of active manganese dioxide from low-grade manganese ore (assaying Mn, 27; Fe, 24.2; SiO₂, 7.53; Al₂O₃, 7.43 per cent) has been developed. The product contains 89.54 per cent available oxygen. Preliminary tests have yielded satisfactory results. Shelf-life tests are in progress.

Central Electrochemical Research
Institute, Karaikudi

Lead Dioxide Electrodes—Deposits of lead dioxide on rod and plate types of anodes obtained by the usual electrochemical process, show a considerable number of pin holes and are unsuitable for use as anode in electrolytic reactions.

Investigations carried out at the Institute have shown that rotation of rod-type anodes and to-and-fro motion of plate-type anodes during the process of deposition favour the formation of smooth and adherent deposits of lead dioxide—K. C. NARASIMHAN & H. V. K. UDUPA.

Central Fuel Research Institute,
Jealgora

Alicyclic Structure in Coal—Dehydrogenation studies on coal have established the presence of

reduced rings in coal structure. The dehydrogenation effected by sulphur (Vesterberg's technique) is similar to dehydrogenation of abietic acid, sterols and sex hormones. Alicyclicity in coal structure progressively diminishes from the lower to the higher ranks of coal; it is 25 per cent in lignite and almost nil in anthracite.

Studies in carbonization behaviour show that dehydrogenation below the decomposition temperature of coal destroys the caking properties and inhibits the formation of tar. The role of alicyclic structure on the industrial behaviour of coal in other respects is under investigation—B. K. MAZUMDAR, S. S. CHOUDHARY, S. K. CHAKRABARTY & A. LAHIRI.

Sponsored Research

Absorption and Dielectric Properties of Lac in the Microwave Region—Dielectric loss and relative permittivity of different seed lacs and rosins were measured in the X band, using an experimental microwave bench designed for the purpose. *Palas* seed has a higher dielectric constant and loss tangent than *kusum* seed lac. Rosins are superior to seed lac in dielectric properties; they have lower dielectric constant and lower loss tangent.

Dielectric constants and dielectric loss of several oils—turpentine, linseed oil, til oil, mustard oil and groundnut oil—were also measured.

The relaxation times of acetone, methyl alcohol, aniline and simple alkylamines have been determined. The relaxation time of primary, secondary and tertiary amines increases with the length of carbon chain—P. N. SHARMA, A. VYAS & H. M. SRIVASTAVA, Lucknow University, Lucknow.

Investigations on Brahmi and Balas—Some of the reputed Ayurvedic drug plants have been investigated.

In the course of a survey of drug plants occurring in Gangetic West Bengal, a number of genetic vari-

ants of *Sida* spp. have been met with. It has been observed that changes in environmental conditions bring about morphological changes; also the relative susceptibility of the variants to different pathogens appears to be different. Phytochemical studies show that the alkaloidal content of the plants is generally low. *Sida caspinifolia* Linn. contains relatively more alkaloids than others—U. P. BASU, S. N. BAL & DILIP GUPTA, Bengal Immunity Research Institute, Calcutta.

Research Papers

CRYSTALLISATION OF INDIAN BEEF TALLOW FATTY ACIDS FROM AQUEOUS ETHANOLS—V. V. R. Subrahmanhyam & K. T. Achaya, RRL, Hyderabad. *J. Amer. Oil Chem. Soc.*, 35 (1958), 467.

SPINEL REFRACTORIES FROM INDIAN BAUXITE—J. C. Banerjee & N. B. Chatterjee, CGCRI, Calcutta. *Refract. J.*, 34 (1958), 407-13.

MEASUREMENT OF ELECTRICAL RESISTIVITY BY THE BALLISTIC METHOD—K. G. Ramanathan, J. S. Dhillon & K. D. Baveja, NPL, New Delhi. *Curr. Sci.*, 27 (1958), 95-96.

THE THERMAL OXIDATION OF Cu (111) AND (100) FACES—Y. N. Trehan & A. Goswami, NCL, Poona. *Trans. Faraday Soc.*, 54 (1958), 1703.

THE TEXTURE OF ZINC AND CADMIUM FILM DEPOSITED ON FRESH CLEAVAGE FACES OF MICA—V. Guru Moorti & M. K. Gharpu, NCL, Poona. *J. Phys.*, 36 (1958), 1319.

BENEFICIATION OF A LAMINATED IRON ORE FROM RAJHARAPAHAR FOR BHILAI STEEL PROJECT—S. K. Banerjee & P. I. A. Narayanan, NML, Jamshedpur. *Indian Min. J.*, 6 (9) (1958), 1-11.

AGEING OF STEEL—B. R. Nijhawan, NML, Jamshedpur. *Tech. J. Tisco*, 5 (1958), 177-82.

PROPERTY CHANGES ON PHASE TRANSFORMATIONS: PHYSICAL THEORY—E. G. Ramachandran, NML, Jamshedpur. *Tech. J. Tisco*, 5 (1958), 183-91.

Personal

*SHRI A. N. BASU has been appointed, on promotion, Asst. Director, CFRI, Jealgora, with effect from Sept. 10, 1958.

Shri Basu (b. Dacca, 1915) obtained his M.Sc. degree in Chemistry from Dacca University (1938). He worked for sometime at the Ordnance Laboratories, Kanpur and proceeded to U.S.A. (1945) under a Government of India scholarship for higher studies at the Coal Research Laboratory, Carnegie Institute of Technology, Pittsburgh. He joined CFRI in 1949. Shri Basu is the author of several research papers on coal hydrogenation, coal constitution, coal tar and its products, and petroleum products.

*DR. C. CHENNA REDDY has been appointed, on promotion, Senior Scientific Officer: Grade I, RRL, Hyderabad, with effect from Nov. 1, 1958.

*SHRI N. G. BANERJEE has been appointed, on promotion, Senior Scientific Officer: Grade I, CFRI, Jealgora, with effect from Nov. 14, 1958.

*SHRI S. K. MUKHERJEE has been appointed, on promotion, Senior Scientific Officer: Grade II, CFRI, Jealgora, with effect from Nov. 6, 1958.

*DR. B. C. BANERJEE has been appointed Senior Scientific Officer: Grade II, CFRI, Jealgora, with effect from Oct. 11, 1958.

*SHRI Y. V. SUBBA RAO has been appointed, on promotion, Junior Scientific Officer, RRL, Hyderabad, with effect from Nov. 1, 1958.

*The following have been appointed Junior Scientific Officers, NML, Jamshedpur, with effect from Nov. 15, 1958: SARVASHRI S. K. RAY, B. V. SOMAYAJULU, R. K. DUBEY, S. B. DAS GUPTA and DR. R. C. KARNATAK.

*SHRI G. S. GUPTA has been appointed Accounts Officer, CFRI, Jealgora, with effect from Nov. 8, 1958.

*DR. K. S. KRISHNAN, Director, NPL, New Delhi, has been re-nominated a member of the General Council, Indian Standards Institution for a period of 3 years.

*DR. J. C. RAY, Director, IIBEM, Calcutta, has been nominated a member of the Karma Samiti (Executive Council) of the Visva Bharati, Santiniketan.

*DR. S. HUSAIN ZAHEER, Director, RRL, Hyderabad, has been appointed Hon. Professor in the Department of Chemistry, Muslim University, Aligarh.

*DR. V. SUBRAHMANYAN, Director, CFTRI, Mysore, has been nominated a member of the Sub-Committee of Agro Industries, De-

partment of Industries, Labour and Cooperation, Madras Government.

*DR. N. L. LAHRY, Asst. Director, CFTRI, Mysore, has been nominated a member of the Poultry Committee, Indian Council of Agricultural Research, New Delhi.

*DR. Y. VENKATASESHAM and DR. B. S. R. SASTRY, Scientific Officers, RRL, Hyderabad, have been nominated CSIR Representatives on the Panel of Experts for Ceramics, Chamber of Small Scale Industries, Andhra Pradesh, Hyderabad.

*DR. T. R. KASTURI, Senior Research Assistant, CSIR, Essential Oils Research Centre, Indian Institute of Science, Bangalore, has been elected Associate of the Royal Institute of Chemistry, London.

PATENTS & PROCESSES

Applications Filed

INDIA

65890: A method for the conversion of higher tar-acids to phenols—N. C. Saha, N. G. Basak & A. Lahiri, CFRI, Jealgora.

65891: A new method for production of high speed diesel oil from coal tar and tar fractions—S. K. Bose, N. G. Basak, A. Ganguly & A. Lahiri, CFRI, Jealgora.

PAKISTAN

935/58: Improvements in or relating to the refining and utilisation of cottonseed products—T. R. Seshadri & K. Chander, University of Delhi, Delhi.

Applications Sealed

INDIA

57888: Improvements in or relating to the production of hydroxy alkox, or aryloxy substituted aryl alkyl ketones—J. L. Bose & B. C. Shah, NCL, Poona.

58868: A process for the preparation of azelaic acid semi-ester suitable for making civetone dicarboxylic acid—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharya, NCL, Poona.

59712: Electrolytic separation of pure lead from high-antimony lead alloys—B. B. Dey & P. R. Rajagopalan, CECRI, Karaikudi.

59927: A process for the preparation of pentadecane-1: 15-dicarboxylic acid or its ester suitable for the preparation of dihydrocivetone—U. G. Nayak, K. K. Chakravarti & S. C. Bhattacharyya, NCL, Poona.

59973: Electrowinning of antimony—B. B. Dey, V. Aravamuthan & P. R. Rajagopalan, CECRI, Karaikudi.

60120: Improvements in or relating to shaft and bearing mechanisms—C. R. Gupta, NPL, New Delhi.

60555: Production of liquid rubber—Uma Shankar, NCL, Poona.

60921: Improvements in the method for manufacture of ether—V. V. Deshpande, A. Ramalingam & N. R. Kuloor, Shri Ram Institute for Industrial Research, Delhi.

61020: Continuous devolatilisation of fuels on a moving bed—A. Lahiri, S. K. Das Gupta, N. N. Das Gupta & A. K. Bose, CFRI, Jealgora.

61320: Improvements in or relating to the preparation of active carbon—K. K. Roy, N. G. Basak & A. Lahiri, CFRI, Jealgora.

61774: A process for the manufacture of magnetic oxide of iron—K. C. Srivastava & O. P. Kulsreshtha, NPL, New Delhi.

